



सत्यमेव जयते

GOVERNMENT OF MAHARASHTRA

**WORKING PLAN**  
**for**  
**AMRAVATI FOREST DIVISION**  
**Amravati Circle**

For the period  
2014-15 to 2023-24

**VOLUME – I**  
(Part-I and II)

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#### **FOREWORD**

The present working plan for Amravati Forest Division authored by P.K. Mahajan and Neenu Somraj Conservator of Forests, Working Plan, Amravati, replaces the last working plan written by Shri Vinod Kumar, R.S. Yadav and G.P. Garad.

An overview of the results of past working plan reveals that forests except that of 4 felling series i.e. Shekdari, Wai, Linga, and Lakhara have degraded during last working plan period. Accordingly part of forests of SCI working circle have been shifted to IWC for better management and sustaining ecology of the region. A new chapter on Bio-diversity is added which highlights floral and faunal diversity and incorporates important provisions of Biological Diversity Act 2002. A new chapter on Urban Forestry has been added to provide impetus to the forest area in the vicinity of the urban landscape. The added emphasis on the management of NTFP and wildlife in the present is likely to add impetus to conservation efforts in the forest area, which covered by the working plan.

The PWPR of the plan is approved prior to Working Plan Code of 2014 by Government of India, therefore as per the directions of GOI the present plan is completed on the guidelines previous working plan code of 2004.

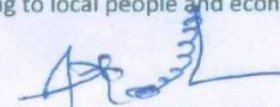
As per PWPR of the plan and the directions given in minutes of SLC meeting held on 22-03-2011 and 25-09-2014 part area of the SCI working circle has been shifted to new IWC working circle. Babul ban forest area in erstwhile Afforestation working circle has been shifted to newly created Babul ban working circle. The mandatory chapters on Forest Protection, Wildlife, NTFP, JFM and Biodiversity will bring objectivity and much needed focus in the management of forests.

Enumeration data has been analysed adequately and compared with the data recorded in the previous plan, which attach objectivity of the plan for resource survey. The pressure of overgrazing and increased biotic interference in and around villages is also revealing the needs to be addressed adequately by the administration through the JFM tool which is yet to effectively establish its roots in the division. The need to tackle the biotic pressure through participatory management has been high lightened in the relevant chapters.

Shri P.K. Mahajan Conservator of Forests Working Plans Amravati and Neenu Somraj Dy. C.F. Amravati I/C Conservator of Forests Working plan Amravati and their team deserve compliments for bringing this work into reality. I wish all the success for their efforts and I am sure that if the prescriptions given in the plan are implemented scrupulously the forests and wildlife in the tract covered would be restored the prime health once again with consequential benefits accruing to local people and economy.

Date- 29-11-2014

Place-Nagpur



(M. Karunakaran)



**P.K. Mahajan, IFS  
Conservator of Forests,  
Working Plan,  
Amravati.**

## **INTRODUCTION**

According to National Working Plan Code, Working Plan is a tool for scientific forest management. It is very useful for evaluating the status of forest resources of a division, assessing the impact of past management practices and deciding about suitable interventions in the future management.

This Working Plan revises the Working Plan prepared by Vinod Kumar, Ramjee Singh Yadav and G.P. Garad for the Period 2004-05 to 2013-14. The Tract dealt within this Working Plan of Amravati Forest Division of five ranges. They are; (1) Amravati, (2) Chandur Railway, (3) Paratwada, (4) Morshi, and (5) Warud,

The PWPR-I was submitted by Shri Sarjan Bhagat then CCF (T) Amravati. It was discussed in the State Level Committee Meeting held at Nagpur on dated 22<sup>nd</sup> March, 2011 and sanctioned with suggestions/ modifications by the various higher officers.

Enumeration of Forests has been done by Forest Resources Survey Scheme Unit, Amravati and collected data submitted to Chief Statistician, Nagpur for analysis on 03/12/2012 and analysis report received on 13/02/2013. Stock mapping of the area is partly done by the Forest Resources Survey Scheme Unit, Amravati and partly by the field staff of Amravati Forest Division.

The PWPR-II covers Reserve Forest, Protected Forest and un-classed forest areas of the division. There are some significant modification have been made in this plan by introducing Improvement Working Circle and Babul ban Working Circle which were absent in the previous working plan. The low production in the coupes allotted in the Selection Cum Improvement Working Circle and poor stocking of harvestable trees justify these changes. Similarly good patches of Babul have been separated from the Afforestation Working Circle and incorporated into Babul ban Working Circle in the new plan. However, Kuran Working Circle is kept as such without any change.

A few compartments fall along the steep slope of Hattighat are kept under Protection Working Circle based on the suggestion given by Shri Sarjan Bhagat, IFS, the then CCF (T), Amravati.

The submission of this plan is slightly delayed due to certain changes in the administration which were unavoidable.

Shri. M. Karunakaran, IFS APCCF WP (East) Nagpur have rendered whole hearted guidance and directions in molding the working plan in its present shape.

My sincere gratitude goes to Shri Virendra Tiwari, IFS and Shri Sanjeev Gaur, IFS CCF (T), Amravati for the continuous support, motivations, enthusiasm and his immense knowledge. His guidance helped in the process of preparation of the plan.

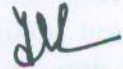
I owe my gratitude to Miss. Neenu Somraj, IFS CF WP Amravati (I/C) who has made this Working Plan possible without significant delay.

Let me acknowledge the valuable contributions given by Dr. R.N. Rai, IFS CCF, WP, Amravati, Shri Mohan Jha, IFS CCF (T) Amravati, (I/C).

My deepest gratitude to Shri S. V. Bedarkar, ACF WP Amravati who has done amazing and outstanding works in both compilation of information and in preparation of this manuscript. The Ranger Surveyor Shri D. M. Korde, V.A.Wardhekar and Surveyor Shri S. B. Dabhade bestowed their abilities in collection, analysis and preparation of this plan.

Shri Satish Mohakar of the GIS cell had done commendable job in surveying and preparation of Maps. The Survey of Forest Resources unit team led by Shri.Niranjan Vivarekar, ACF and assisted by Shri A.T.Talokar, P.S.Tingne and P.S.Isal effort is highly acknowledge here. Shri.Mufaddal A. Shakir, helped in preparing the manuscripts, I am also grateful to all the staff of Working Plan Division, Amravati and Amravati Forest Division, who had contributed a lot for the preparation of this plan.

Amravati,  
Dated - 19/11/2014

  
(P.K.MAHAJAN)

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## I. ABBREVIATIONS USED IN THE PLAN

<b>ACF</b>	<b>Assistant Conservator of Forests</b>
<b>APCCF (P &amp; M)</b>	<b>Additional Principal Chief Conservator of Forest, (Production and management)</b>
<b>bh</b>	<b>Breast height</b>
<b>B and C Department</b>	<b>Building and Construction Department</b>
<b>CAI</b>	<b>Current Annual Increment</b>
<b>CF</b>	<b>Conservator of Forest</b>
<b>CCF</b>	<b>Chief Conservator of Forest</b>
<b>CCF WP</b>	<b>Chief Conservator of Forest, Working Plan</b>
<b>Cft</b>	<b>Cubic feet</b>
<b>Cm</b>	<b>Centimeter</b>
<b>Comptt</b>	<b>Compartment</b>
<b>Contd.</b>	<b>Continued</b>
<b>Dbh ub</b>	<b>Diameter at breast height under bark</b>
<b>Dbh ob</b>	<b>Diameter at breast height over bark</b>
<b>DCF</b>	<b>Deputy Conservator of Forest</b>
<b>Dn</b>	<b>Division</b>
<b>FRH</b>	<b>Forest Rest House</b>
<b>FRSS</b>	<b>Forest Resources Survey Scheme</b>
<b>FS</b>	<b>Felling Series</b>
<b>FV</b>	<b>Forest Village</b>
<b>gbh</b>	<b>Girth at breast height</b>
<b>GIS</b>	<b>Geographical information system</b>
<b>GPS</b>	<b>Geographical positioning system</b>
<b>Govt</b>	<b>Government</b>
<b>GOI</b>	<b>Government of India</b>
<b>Ha</b>	<b>Hectare</b>
<b>Inch</b>	<b>Inches</b>
<b>JFM</b>	<b>Joint Forest Management</b>
<b>Km</b>	<b>Kilometer</b>
<b>M</b>	<b>Metre</b>
<b>M<sup>3</sup></b>	<b>Cubic-metre</b>
<b>MAI</b>	<b>Mean Annual Increment</b>
<b>Mah</b>	<b>Maharashtra</b>
<b>No</b>	<b>Number</b>
<b>NTFP</b>	<b>Non Timber Forest Produce</b>
<b>(p)</b>	<b>Part</b>
<b>PB</b>	<b>Periodic block</b>
<b>PCCF</b>	<b>Principal chief conservator of forest</b>
<b>PWC</b>	<b>Protection Working Circle</b>
<b>RFO</b>	<b>Range Forest officer</b>
<b>RH</b>	<b>Rest House</b>
<b>Rs</b>	<b>Rupees</b>
<b>SCI</b>	<b>Selection Cum Improvement</b>
<b>Sq</b>	<b>Square</b>
<b>U</b>	<b>Under</b>
<b>WC</b>	<b>Working Circle</b>
<b>WL</b>	<b>Wildlife</b>
<b>WP</b>	<b>Working Plan</b>
<b>WPO</b>	<b>Working Plan officer</b>
<b>Yrs</b>	<b>Years</b>

## II. GLOSSARY OF LOCAL TERMS USED IN THE PLAN

Ara	<b>A roughly fashioned piece of timber suitable for making into a spoke Also a pole of medium girth suitable for use as a ridge-piece or bressummer in house construction.</b>
Bakhar	<b>A hoe.</b>
Balla	<b>A plateau</b>
Balli	<b>A thin pole suitable for use as a rafter.</b>
Bidi	<b>A cigarette prepared by rolling dried leave generally of Tendu (<i>Diospyros melanoxylon</i>)</b>
Dahya	<b>Shifting cultivation.</b>
Dengri	<b>A short pole between 30 cm. and 45cm. in girth and under 2.5 m. in length suitable for use as a fencing post.</b>
Dhar	<b>A narrow ridge</b>
Doh	<b>A deep pond in a stream or river.</b>
Geru	<b>A paint prepared form red chalk.</b>
Lakh	<b>A hundred thousand.</b>
Mahout	<b>An Elephant Care Taker</b>
Mandawa Mala	<b>Wooden shelter or shed constructed for a temporary purpose such as protection of crops.</b>
Murram	<b>A reddish hard soil.</b>
Nagar	<b>A plough.</b>
Padao	<b>A camping ground or a place where timber is collected for export.</b>
Patel	<b>A headman of a village.</b>
Putha	<b>A roughly fashioned piece of timber suitable for making into a felloe.</b>
Raiyatwari	<b>A form of land tenure, applied to land in rayatwari Tenure and to villagers holding such land.</b>
Ramna	<b>A grass reserve.</b>
Satkata	<b>Miscellaneous trees.</b>
Shikar	<b>Hunting.</b>
Tahsil	<b>A part of civil district formed for administrative purposes.</b>
Tatta	<b>A mat , usually made from split bamboos but occasionally from twigs of <i>Vitex negundo</i>.</b>
Warli	<b>A rectangular boundary cairn.</b>

BOTANICAL AND LOCAL NAMES OF PLANTS AND WILD ANIMALS

Note. - 1} H- *Hindi*; M - *Marathi*; K - *Korku*; E- *English*. V.A - *Very abundant*; A- *Abundant* F - *Frequent*; O - *Occasional*; R - *Rare*; V.R. *Very rare*; L. *Local* {prefixed to any of the above. }

A-Trees

Local Name	Botanical Names	Remarks
1	2	3
<b>Amta, H.</b> <b>Ambotha, K.</b>	<i>Bauhinia malabarica, Roxb</i>	O
<b>Amaltas, H.</b>	<i>Cassia fistula, linn</i>	F
<b>Apta M.</b>	<i>Bauhinia racemosa, Lamk</i>	F
<b>Aonla, H.</b>	<i>Emblica officinalis, Gaertn</i>	
<b>Aonla M. K.</b>	<i>Syn. Phyllanthus emblica, linn</i>	V. A.
<b>Anjan, M. H. K.</b>	<i>Hardwickia binata, Roxb</i>	L. F. Dabida reserve
<b>Arang, K.</b>	<i>Kydia calycina Roxb</i> <i>Eriolaena keriana, W. and A</i>	O.
<b>Am H. K.</b> <b>Amba, M.</b>	<i>Mangifera indica, Linn</i>	F
<b>Ahl H. M.</b>	<i>Morinda tinctoria, Roxb</i>	L. O
<b>Ambada M.</b> .	<i>Spondiam pinnata (linnf Kurz.).</i> <i>Syn. Spondias mangifera, willd.</i>	V. R.
<b>Ain, M.</b>	<i>Terminalia tomentosa, W. and A.</i>	A
<b>Achar H. M.</b>	<i>Buchanania lanzan, spreng Syn.</i> <i>Buchanania latifolia Roxb.</i>	F
<b>Babul, H.M. K.</b>	<i>Acacia arabica, willd.</i>	R
<b>Bel. H. M.</b> <b>Bela K.</b>	<i>Aegle marmelos, Correa</i>	F
<b>Bhosa, K.</b>	<i>Bauhinia racemosa, Lamk</i>	F
<b>Bahawa, M.</b> <b>Bhanaka bongru, K.</b>	<i>Cassia fistula, Linn.</i>	F
<b>Baru, K.</b>	<i>Schleichera oleosa, { Lour } Oken</i> <i>Syn. Schleichera trijuga, Willd</i>	F
<b>Bhirra, H. M. K.</b>	<i>Chloroxylon swietenia, D. C. L. A</i>	Kohana, Behali
<b>Bhoti H.</b> <b>Bhondia-</b>	<i>Eriolaena hookeriana, W and A.</i>	O
<b>Bar H..</b> <b>Banyan, E.</b>	<i>Ficus bengalensis, Linn</i>	F
<b>Bhorsal, M. K.</b>	<i>Hymenodictyon excelsum, Wall</i>	R

Local Name	Botanical Names	Remarks
Barga, H. Bhoti, K.	<i>Kydia calycina</i> , Roxb.	A
Bakain, H. M. K.	<i>Melia azedarach</i> Linn.	V. R.
Bija, H. M.	<i>Pterocarpus marsupium</i> Roxb.	O
Bhilawa H. Biba M .	<i>Semecarpus anacardium</i> , Linn f.	F
Bahera, H. M. K.	<i>Terminalia bellerica</i> Roxb	A
Ber H. Bor, H. M. K.	<i>Zizyphus jujuba</i> , Lamk Syn. <i>Zizyphus mauritiana</i> Lamk	A
Baringa, K. Boria, K.	<i>Grewia tiliaefolia</i> , Vahl <i>Glochidion velutinum</i> , Wight	V. A L. F. Chikhaldara
Chichwa, M. Chichlor, K.	<i>Albizzia odoratissima</i> , Benth	O
Chapa, K.	<i>Bauhinia variegata</i> , linn	L. F.
Char, H. M.	<i>Buchanania lanzan</i> , Spreng Syn. <i>Buchananina latifolia</i> , Roxb.	F
Chirohol, H. Chilla K.	<i>Holoptelea integrifolia</i> , X Planch.	O
Chakrej, K.	<i>Lagerstroemia parviflora</i> , Roxb.	V. A.
Chandan, H. M. K	<i>Santalum album</i> Linn.	V. R. Gawilgarh Fort
Choso , K.	<i>Semecarpus anacardium</i> , Linn.f	F
Chinch M. Chicha, K .	<i>Tamarindus indica</i> .	O
Chawar, K. Chaura, K.	<i>Sterculia colorata</i> , Roxb.	L. O. Chikhaldara
Dhaora, H. M. K.	<i>Anogeissus latifolia</i> , Wall .	V. A
Dahi- palas, M.	<i>Cordia macleodii</i> , H. F. and Th.	L. O.
Dhoban, H.	<i>Dalbergia paniculata</i> , Roxb.	A
Dhaman, H. M. K.	<i>Grewia tiliaefolia</i> , Vahl.	V. A.
Dhaman, K.	<i>Grewia orbiculata</i> , Rotter.	V. R
Dudhi, H.	<i>Holarrhena antidysentrica</i> , Wall .	F
Dudhi, H Dudiya K.	<i>Wrightia tinctoria</i> , A Br.	V. R.
Dudhi H. Dudhari, K.	<i>Wrightia tomentosa</i> , Roem. and Sch.	V. R.
Goria nim. K.	<i>Cedrela toona</i> , Roxb.	L. O. Chikhaldara, Bairat, Makhala.

Local Name	Botanical Names	Remarks
Gabdi, H . Gongal,M. Ganer,M.	<i>Cochlospermum gossypium, D.C.A.</i>	Dhulghat
Ganer, K.	<i>Erythrina suberosa, Roxb.</i>	L. A.
Gular, H .	<i>Ficus glomerata, Roxb.</i>	A.
Goraghoti, K.	<i>Flacourtia ramontchi, L Herit.</i>	F.
Ghetu, K.	<i>Randia dumetorum, Lamk.</i>	F.
Ghangru, K.	<i>Randia uliginosa, D. C.</i>	O.
Ghatbor, M. K. Ghota, K.	<i>Zizyphus xylopyra ,Willd.,</i>	A.
Gondan, M.	<i>Cordia dichotoma, Forst.</i> <i>Syn. Cordia myxa, Linn.</i>	V. R. Koktu.
Hiwar, M.	<i>Acacia leucophloea, willd.</i>	L. O.
Haldu, H. M. K	<i>Adina cordifolia, Hook, f</i>	A and L. V. A.
Homba,M. K.	<i>Saccopetalum tomentosum ,</i> <i>H. f. and Th.</i>	A.
Harra, H . Hilda, M.K. Hirda, M. K.	<i>Terminalia chebula, Retz.</i>	L. A.
Imli, H.	<i>Tamarindus indica.</i>	O.
Jamrassi, H.M.	<i>Elaeodendron glaucum, Pers.</i>	O.
Jamun, H. Jambhul, M. Jambu K.	<i>Eugenia cumini ( Linn.) , Dru.</i> <i>Syn. Schyzigium cumini</i>	L. A.
Jhan, K.	<i>Schrebera swietenoides, Roxb.</i>	A.
Kala dhendra, H.	<i>Randia uliginosa, D. C.</i>	O.
Khair, H. M. K.	<i>Acacia catechu, Willd.</i>	L. F. occurs In opendry Forest and frost Areas.
Kinhi, M. K.	<i>Albizzia procera, Benth .</i>	O.
Khatua H, Katumba, K .	<i>Antidesma diandrum, Roth.</i>	R.
Keolar, H. Keolari, K.	<i>Bauhinia purpurea, linn.</i>	L. A.
Kachnar, H.	<i>Bauhinia variegata, Linn.</i>	L. F.
Khatsawar, M .	<i>Bombax malabaricum, O C. Syn.</i> <i>Bombax ceiba, Linn.</i>	O.

Local Name	Botanical Names	Remarks
Kasai ,H. Katiyen, M. Karkha, K.	<i>Bridelia retusa, spr.</i>	A.
Kumbhi, H. M. K	<i>Careya arborea, Roxb.</i>	C. and L. A. The latter on high Plateau.
Kesa, K.	<i>Casearia tomentosa, Roxb.</i>	A.
Karanleo K.	<i>Dolichandrone crispa, Seem.</i>	R.
Korelawa, K.	<i>Ficus cunia, Ham.</i>	R.
Korelawa, K.	<i>Ficus hispida Linn.</i>	R.
Karkai, M.	<i>Flacourtia ramontchi, L Herit</i>	E.
Kakar, H. Kekda.	<i>Garuga pinnata, Roxb.</i>	A.
Kolya, K. Kolsa, K.	<i>Glochidion velutinum Wight.</i>	L. F. Chikhaldal . .
Kasmar, K.	<i>Gmelina arborea, Roxb.</i>	O.
Kuda , M. Kurakat ,K.	<i>Holarrhena antidysenterica. Wall.</i>	F.
Karanjalām, K.	<i>Holoptelea integrifolia, Planch.</i>	O.
Kukum K.	<i>Mallotus philippensis, Muell.</i>	O.
Kari, H. M. K.	<i>Miliusa velutina, H. f and Th .</i>	O.
Kalam, M. Kuram, K. Kurumbo K.	<i>Mitragyna parvifolia, Korth Syn Stephegyne parvifolia, Korth.</i>	F.
Kari, H.	<i>Saccopetalum tomentosum, H. f and Th.</i>	O.
Kusum H.	<i>Schleichera oleosa ( Lour ), Merr.</i>	F.
Kusumb M.	<i>Syn. Schleicheria trijuga, Willd.</i>	F.
Katamba, K.	<i>Spondias pinnata, (Linn.f) Kurz Syn. Spondias mangifera, Wild.</i>	V. R.
Kulu H. M. Karhai, H. M.	<i>Sterculia urens ,Roxb.</i>	A.
Kudal K. Kuthada, K.	<i>Sterculia villosa , Roxb.</i>	R.
Kalatetu, K.	<i>Stereospermum xylocarpum</i>	L.O. Chikhaldal, Bajrat
Kahu, H. Kowa, K.	<i>Terminalia arjuna, Bedo.</i>	L.A.

Local Name	Botanical Names	Remarks
<b>Khudaibidi, K.</b>	<i>Trema orientalis, Bl</i>	O.
<b>Kura, K .</b>	<i>Wrightia tinctoria, A Br.</i>	A.
<b>Limburi, K.</b>	<i>Azadirachta indica, A Juss.</i>	
<b>Lasora, H.</b>	<i>Cordia dichotma, Forest</i> <i>Syn. Cordia myxa.Linn.</i>	V. R. Koktu.
<b>Laurikasmar, K.</b>	<i>Cordia macleodii, H,f and Th.</i>	L. O.
<b>Lawa, K.</b>	<i>Ficus glomerata, Roxb.</i>	A.
<b>Lokhandi, M.K.</b>	<i>Ixora parviflora, Vahl.</i>	L.A.
<b>Lendia J. M .</b>	<i>Lagerstroemia parviflora</i>	V. A.
<b>Lenia K.</b>	<i>Litsee sebifera, pers.</i>	R. Higher Elevations.
<b>Maharuk, H. M.</b> <b>Marukha, K.</b>	<i>Ailanthus excelsa, Roxb.</i>	R.
<b>Medsing, H.M.</b>	<i>Dolichandrone falcata, Seem</i>	R.
<b>Mohin, H.M. K.</b> <b>Moyen ,H.</b> <b>Mohi. H. M. K.</b>	<i>Lannea grandis, Engl</i> <i>Syn. Odina woodier, Roxb</i>	A.
<b>Maidalkri, H.</b>	<i>Litsia glutinosa pers .</i>	R. Higher. Elevation .
<b>Mahua ,H</b> <b>Mohawa. M.</b> <b>Mu, moha, K.</b>	<i>Madhuca latifolia, Roxb macbride</i> <i>Syn. Bassia latifolia</i>	F .
<b>Mango, E.</b>	<i>Mangifera indica, Linn.</i>	F.
<b>Mainhar, H.</b> <b>Mainphal, H..</b>	<i>Randia dumetorum, Lamk</i>	F.
<b>Mokha H. M.</b>	<i>Schrebera swietenoides, Roxb.</i>	A.
<b>Nim H. M.</b>	<i>Azadirachta indica, A Juss.</i>	L.O. occurs in southern foot hills.
<b>Nazarijot, K.</b>	<i>Dolichandrone falcata seem</i>	R.
<b>Niru, K.</b>	<i>Elaeodendron glaucum, Pers.</i>	O.
<b>Nagthada, K.</b>	<i>Erythrina suberosa, Roxb</i>	L. A.
<b>Palas, H.M.</b> <b>Pharsa K.</b>	<i>Butea monosperma Lam..</i>	L. A.
<b>Phangra, K.</b>	<i>Cochlospermum gossypium, D.C</i>	A. Dhulghat.
<b>Phansi, M.</b> <b>Passi, K.</b>	<i>Dalbergia paniculata Roxb.</i>	A.
<b>Padar, M.</b>	<i>Dolichandrone crispa Seem.</i>	O.
<b>Phangra, M.</b>	<i>Erythrina suberosa, Roxb.</i>	L. A.

Local Name	Botanical Names	Remarks
<b>Pakar, H. M.</b> <b>Pipri, K.</b>	<i>Ficus infectoria</i> , <i>Roxb.</i>	O.
<b>Pipal, H.M.</b>	<i>Ficus religiosa</i> , <i>Linn.</i>	
<b>Phendra ,M,</b> <b>Phetra M.</b> <b>Purputta K.</b>	<i>Gardenia turgida</i> , <i>Roxb.</i>	O.
<b>Phulangaty K..</b> <b>Phulangaty Pu, K.</b>	<i>Oroxylum indicum</i> , <i>vent</i>	R.
<b>Putpuuys, K.</b>	<i>Randia uliginosa</i> , <i>D.C.</i>	O.
<b>Pinj, M .</b>	<i>Sterculia colorata</i> , <i>Roxb.</i>	V. R. <i>Chikhald.</i>
<b>Padar, H M. K.</b>	<i>Stereospermum chelonoides</i> , <i>D,C.</i>	R.
<b>Padar H M. K.</b>	<i>Stereospermum suaveolens</i> , <i>D,C.</i>	O.
<b>Rawa chachu K.</b>	<i>Acacia lenticularis</i> , <i>Ham.</i>	
<b>Rounjha. H.</b>	<i>Acacia leucophloea</i> , <i>willd.</i>	L. O.
<b>Rivit, K.</b>	<i>Casearia graveolens</i> . <i>Dalz .</i>	A.
<b>Rori.</b>	<i>Mallotus philippinensis</i> <i>Muell.</i>	O.
<b>Ruthu. K.</b>	<i>Ougeinia dalbergioides</i> . <i>Benth.</i>	V. A.
<b>Rohan M</b> <b>Rohani M. K..</b>	<i>Soymida febrifuga</i> , <i>a Iuss.</i>	O.
<b>Safed siris, H.</b>	<i>Albizzia procera</i> , <i>Benth.</i>	O .
<b>Sagon, H.</b> <b>Sag. Sagwan M.</b> <b>Sipna, K.</b>	<i>Tectona grandis</i> . <i>Linn.</i>	V. A.
<b>Saj H,</b> <b>Sadram, M.</b>	<i>Terminalia tomentosa</i> , <i>W. and A.</i>	A.
<b>Siris kala H.</b>	<i>Albizzia odoratissima</i> <i>Benth.</i>	O.
<b>Sitaphal H. K.</b>	<i>Anona squamosa</i> . <i>Linn.</i>	L.F. occurs near <i>Khatkali</i> in <i>Khirpani Range.</i>
<b>Semal, H.</b> <b>Saori , K.</b>	<i>Bombax ceiba</i> , <i>D.C.</i>	O.
<b>Salai , H. M. K.</b>	<i>Boswellia serrata</i> , <i>Roxb</i>	V. A.

Local Name	Botanical Names	Remarks
Silu, K.	<i>Cordia dichotoma</i> , Forest Syn. <i>Cordia myxa</i> , linn.	V. R. Koktu.
Shisham, H. M.	<i>Dalbergia latifolia</i> , Roxb	O.
Sisoo, K.	<i>Dalbergia sisso</i>	
Shewan, M.	<i>Gmelina arborea</i> , Roxb	O.
Shendri, M.	<i>Mallotus philippinensis</i> , muell.	O.
Sejna, H. K.	<i>Moringa oleifera</i> , Lamk.	R.
Shewaja, M.	syn. <i>Moringa pterygosperma</i> .	
Shindhi, M. Sendhi, K.	<i>Phoenix sylvestris</i> , Roxb.	R.
Tarop, K.	<i>Buchanania lanzan</i> , spreng Syn. <i>Buchanania latifolia</i> Roxb.	F.
Tun, H.	<i>Cedrela toona</i> , Roxb.	L. O. Chikhald. Bairat, Makhala.
Tendu, H. Tembru, M. K. Tembhurni, M. K.	<i>Disopyros melanoxylon</i> , Roxb	F. and L. A.
Tetu, K.	<i>Dolichandrone crispera</i> , seem	O.
Thuar, H.M.K.	<i>Euphorbia nivulia</i> , Ham	L. A. Rocky steep and Precipitious slopes.
Tetu, K.	<i>Oroxylum indicum</i> , Vent	R.
Tetu, K.	<i>Stereospermum xylocarpum</i> , Benth	L. O. Chikhald. Bairat.
Tinsa, H. Tiwas, M.	<i>Ougeinia dalbergioides</i> , Benth Sym. <i>Ougeinia oogeinensis</i> .	V. A.
Teklet, K.	<i>Sterculia urens</i> , Roxb.	A.
Teak, E.	<i>Tectona grandis</i> , Linn.	V. A.
Thoar, K. Thori, K.	<i>Trema orientalis</i> . Bl	O.
Thoar, K. Thori, K. Turat, K.	<i>Trema politoria</i> Planch	O.
Tilwan, H. K.	<i>Wendlandia exserta</i> . D. C	V. R.
Umber, M.	<i>Ficus glomerata</i> , Roxb,	A.
War, M. Wora, K.	<i>Ficus bengalensis</i> , Linn	F

B - Shrubs

Local Name	Botanical Names	Remarks
<b>Bhandar, K.</b>	<i>Colebrookia oppositifolia, Smith</i>	L. A.
<b>Baibarang, H.</b> <b>Brengeh ,K.</b> <b>Bharangeh, K.</b>	<i>Embelia ribes, roxb.</i>	L. A.
<b>Bharati, M. K.</b>	<i>Gymnosporia montana, law</i>	L. O.
<b>Bholari, K.</b> <b>Bhirhol, H.</b>	<i>Indigofera pulchella, Roxb.</i>	L. F
<b>Banda, H. K.</b>	<i>Loranthus scurrula, linn</i>	R
<b>Banda, H. K.</b>	<i>Loranthus longiflorus, Desr</i>	R
<b>Bhandar, K.</b>	<i>Pogostemon plectranthoides Desf.</i>	L. A.
<b>Bhandar, K.</b>	<i>Strobilanthes callousus, nees.</i>	L.V. A.
<b>Bankabas, H.M.K.</b>	<i>Thespesia lampas, Dalz and Gibs</i>	L. A.
<b>Bor, M. K.</b>	<i>Zizyphus rotundifolia,, Lamk Syn.</i> <i>Zizyphus nummularia W. and A.</i>	L. F.

C-Climbers

Local Name	Botanical Names	Remarks
<b>Chilati, M.</b>	<i>Caesalpinia sepiaria Roxb</i>	L. F.
<b>Chameli, H.</b>	<i>Jasminum arborescens,Roxb</i>	L. F.
<b>Chilatri M. K.</b>	<i>Mimosa rubicaulis, Lamk.</i>	L. F.
<b>Churni, K.</b>	<i>Zizyphus rugosa, Lamk.</i>	F. and L. A
<b>Dhawan, H.</b> <b>Dhawati, M.</b> <b>Dhi, K.</b> <b>Dhin, K.</b>	<i>Woodfordia floribunda, Salisb.</i> <i>Syn Woodfordia fruticosa, Kurz.</i>	L. A.
<b>Guno-hi,H. M. K.</b>	<i>Abrus precatorius, Linn.</i>	
<b>Gursakri, H.</b> <b>Ghordhaman, M.</b>	<i>Grewia flvescens, Juss.</i>	O.
<b>Gwagar, K.</b>	<i>Hamiltonia suaveolens.</i>	L. F.
<b>Jhau, H M. K.</b>	<i>Tamarix gallica, Linn.</i>	L. A.
<b>Katakholso, K.</b>	<i>Daedalacanthus roseus, T. anders.</i>	L. A.
<b>Korajoth, K.</b>	<i>Helicteres isora, Linn.</i>	A.
<b>Karsali, K.</b>	<i>Nyctanthes arbortristis, Linn..</i>	L. A.
<b>Kawarka, M.</b>	<i>Loranthus longiflorus, Desr.</i>	R.
<b>Karsah, K.</b>	<i>Nyctanthes arbortristis, Linn.</i>	L. A.
<b>Lalgunchi, H</b>	<i>Lantana aculeata, Linn.</i>	O.

Local Name	Botanical Names	Remarks
<b>Lalgunchi H.M K</b>	<i>Abrus precatorius, Linn.</i>	<b>O.</b>
<b>Mekar, K</b>	<i>Gymnosporia montana, Benth.</i>	<b>L. O.</b>
<b>Lantana, H.</b>	<i>Lantana aculeate, Linn.</i>	<b>V. A.</b>
<b>Marorphal, H.</b>	<i>Helicteres isora, Linn.</i>	<b>A.</b>
<b>Muradsheng, M.</b>		
<b>Nirguri, M.</b>	<i>Vitex negundo, linn.</i>	<b>L. A.</b>
<b>Pithondi, M. K.</b>	<i>Fluggea microcarpa, Bl.</i>	<b>L. A.</b>
<b>Raimunia, K.</b>	<i>Lantana aculeate, Linn. Syn.</i> <i>Lantana camara, Linn</i>	<b>V.A.</b>
<b>Ringni, K.</b>	<i>Solanum indicum, Linn.</i>	<b>F.</b>
<b>Samalu, K.</b>	<i>Vitex negundo, Linn.</i>	<b>L. A.</b>
<b>Sakria, K.</b>	<i>Zizyphus rugosa, Lamk.</i>	<b>F. and L. A.</b>
<b>Tarwar, K. M.</b>	<i>Cassia auriculata, Linn.</i>	<b>L. F.</b>

D - Herbs

Local Name	Botanical Names	Remarks
<b>Babra, M. K.</b>	<i>Dioscorea pentaphylla, Linn.</i>	<b>A climbing Herb. O.</b>
<b>Baichandi, H.</b>	<i>Dioscorea daemona, Roxbn.</i>	<b>A climbing Herb. F.</b>
<b>Baval, K.</b>	<i>Dioscorea bulbifera. Linn</i>	<b>A climbing Herb F.</b>
<b>Jangli Kela, H.</b>	<i>Musa superba, Roxb.</i>	<b>L.F. occurs on On Rocky hillside and bank of streams especially at high evelations.</b>
<b>Kulu, K.</b>	<i>Dioscorea daemona, Roxb</i>	<b>A. climbing herb F.</b>
<b>Tora, K.</b>	<i>Musa superba, Roxb.</i>	<b>L. F.</b>
<b>Tarota, M. K.</b>	<i>Cassia tora, Linn.</i>	<b>L. A. Occurs in heavily grazed Forests in the south.</b>
<b>Wild banana, E.</b>	<i>Musa superba, Roxb.</i>	<b>L. F.</b>

E- Grasses, Sedges and Bamboos

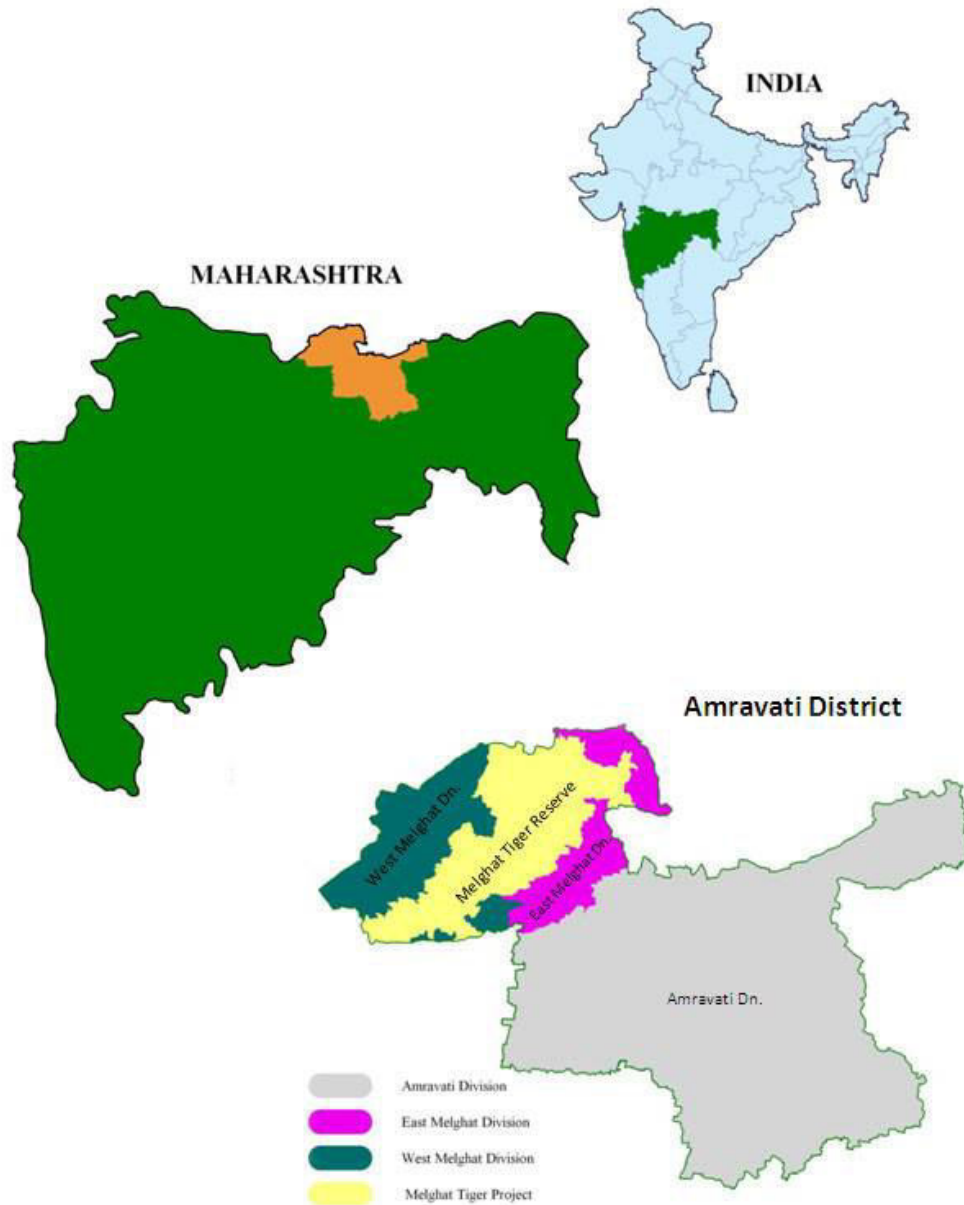
Local Name	Botanical Names	Remarks
Baba Jara, K.	<i>Heteropogon ritchiei</i> , ( Hook . f. ) <i>Blatter and Mc. Laun.</i>	A.
Bamboo, E.	<i>Bambusa arundinacea</i> , willd.	L. A.
Bamboo, E. Bana, H. M. K.	<i>Dendrocalamus strictus nees.</i>	
Baru, K. Boru, K.	<i>Sorghum halepense</i> , pers.	L. A. occurs on frost areas and on old Village sites.
Dongra, K.	<i>Cyperus tegetum</i> , Roxb.	L. F. occurs River bed in the north west.
Gondall, K. Gondhali, K.	<i>Anthistiria ciliata</i> , Linn.	F. L. A. occurs hill Tops. and old village areas.
Karsah, K.	<i>Chionocachne barbata</i> , R. Br.	L. A. occurs in forest areas and in valleys.
Katang bans, H. M. K.	<i>Bambusa arundinacea</i> , willd.	L. A. occurs in the Sipna valley between Semadoh and Pili Where it has been Introduced.
Kusal, M.	<i>Heteropogon contortus</i> , (L Beauv. Ex Roem. and Sch. Syn. <i>andropogon contortus</i> )	A.
Podar, H	<i>Sorghum halepense</i> . Pers	L. A.
Phor, K. Pochati, K. Phuli, K.	<i>Heteropogon ritchiei</i> (Hook, f Blatter and Mc. Laun..)	A.
Poc-hati, K. Phuli K.	<i>Apluda varia</i> , hack.	A.
Rusa, H. M. K.	<i>Cymbopogon martini</i> , stapf Syn. <i>andropogon schoenanthus</i> , Linn.	F. Two varieties Called 'Motia' and 'Sofia' occur.
Sainar, K	<i>Ischaemum sulcatum</i> , Hack.	A.
Sukal, M. Sukla, M.	<i>Steropogon contortus</i> (L) Beauv. Ex Roman and Sch. Syn, <i>andropogon contortus</i> , Linn	A.
Tikhari, H. M. K.	<i>Cymbopogon martini</i> , Stapf Syn. <i>andropogon Schoenanthus</i> , Linn.	F. Two varieties called 'Sofia' and 'Motia' Occur.

F - Plants grown as field crops

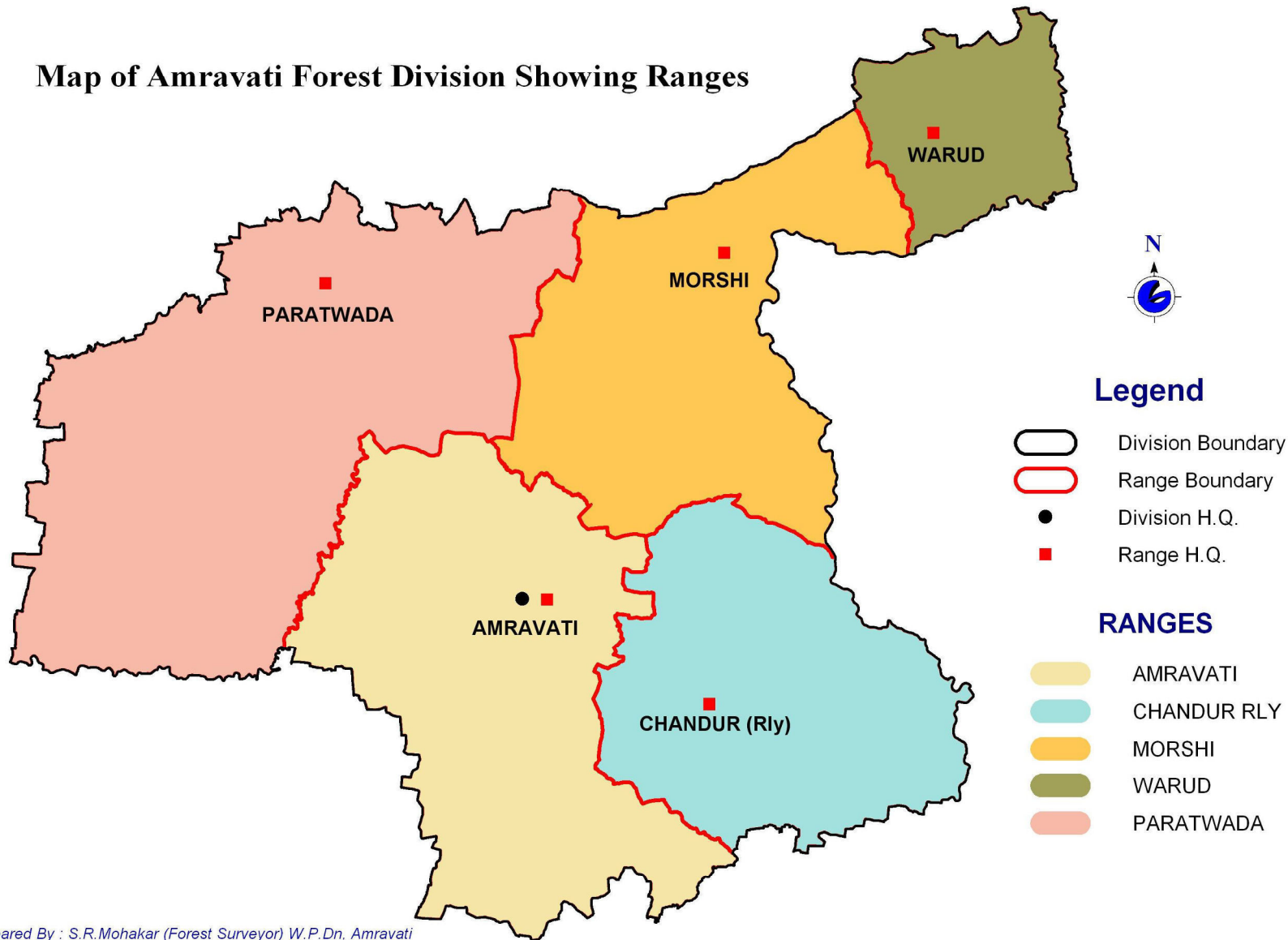
Local Name	Botanical Names	Remarks
Arhar, H.	<i>Cajanus indicus</i> , Spreng.	
Betel vine, E.	<i>Piper betle</i> , Linn.	
Channa H.M.	<i>Cicer arietinum</i> , Linn.	
Cotton E.	<i>Gossypium herbaceum</i> , Linn.	
Gram, E.	<i>Cicer arietinum</i> , Linn.	
Jagni, K.	<i>Guizotia abyssinica</i> , cass.	
Juari, H.M.K.	<i>Sorghum vulgare</i> , pers.	
Kapas, H, M.	<i>Gossypium herbaceum</i> , Linn.	
Kodon, M.K.	<i>Paspalum scrobiculatum</i> , Linn.	
Kutki, H.M.K	<i>Panicum miliare</i> , Lamk.	
Masur, H.M.	<i>Ervum lens</i> Linn.	
Pan, H. M.	<i>Piper betle</i> Linn.	
Sawan, K.	<i>Panicum crus-galli-frumentaceum</i> , Roxb.	
Tur, M.	<i>Cajanus indicus</i> . Spr.	



# Location Map of Amravati Division



# Map of Amravati Forest Division Showing Ranges



Prepared By : S.R.Mohakar (Forest Surveyor) W.P.Dn, Amravati

PART – I

SUMMARY OF FACTS ON WHICH  
PROPOSALS ARE BASED

CHAPTER – 1

THE TRACT DEALT WITH

SECTION: 1 NAME AND SITUATION:

1.1. LOCATION:

1.1.1. **Amravati Forest Division is confined to Amravati District of Maharashtra State. It comprises Amravati, Tiwsa, Chandur (Rly), Nandgaon (Khandeswar), Chandur Bazar, Bhatkuli, Achalpur, Daryapur, Ajangaon Surji (Part), Chikhaldara (Part), Morshi, Dhamangaon and Warud Tahsils of the Amravati and administratively it is under Amravati Forest (Territorial) Circle.**

1.1.2. **The Amravati Forest Division lies between the longitudes 76° 38' and 78° 30' East, and 20° 32' and 21° 37' North. The forests are found both in the compact blocks as well as in scattered patches. Forests of Shekdari and Hattighat Reserves lies on steep slopes while Mahendri and Lakahra reserves are on lower slopes. Chirodi reserve comprises a line of low hills, Babul Ban and Ramanas are scattered over plains.**

1.1.3. **The tract is drained by the rivers Pedhi, Chandrabhaga, Purna, Maru, Deo, Chargarh, Nal, and Wardha. Pedhi River runs from north to south thorough the entire length of Amravati taluka and part of Achalpur taluka. Large no. of Babul bans lie along the banks of these rivers or its tributaries. Chandrabhaga runs through the western part of Achalpur taluka and then through the middle of Daryapur taluka to join Purna river at Dhamni Khurd. Purna river runs through the eastern part of the Achalpur taluka from north to south and then it forms western boundary of Daryapur taluka. A large no. of Babul bans of Achalpur taluka are situated on the banks of Chandrabhaga river and most of the Babul bans of Daryapur taluka lie along banks of Chandrabhaga and Purna rivers or along their tributaries.**

1.1.4. **Important streams of Morshi taluka are the Maru, the Deo, the Chargarh and the Nal rivers. Most of the Babul bans in Morshi taluka are situated on the banks of these rivers or the Wardha river which forms the eastern and part of the southern boundary of this taluka.**

1.1.5. BOUNDARIES:

**North :- Betul and Chhindwada District of Madhya Pradesh  
East :- Nagpur and Wardha District of Maharashtra  
South :- Yavatmal and Akola District of Maharashtra  
West :- Akola District of Maharashtra**

SECTION 2 - CONFIGURATION OF THE GROUND :-

1.2.1 **The tract of Amravati Forest Division is situated on the southern uplands of Melghats and on the western portion of the Satupuda hill ranges. The tract is hilly and undulating broken by broad valleys and interspersed with gently sloping plains. Most of the land lies on high level plateau at an average elevation of 215 mt to 854 mt. above MSL. Sloping gently towards east ward forming Wardha basin and toward west wards forming Tapi basin. Highest elevation is 854 mts. from MSL and lowest elevation is of 215 mts. From MSL. At places the plateau rises through steeps slopes to higher elevation to from ridges covering the flat masses on the top developing in the sharp crested peaks**

Head Quarter of the Division is at Amravati.

## SECTION 3 - GEOLOGY, ROCK AND SOIL:-

### 1.3.1. The geological formations of the tract are as follows

Recent to sub-recent :- **Alluvium/ Laterite**

Eocene to cretaceous :- **Deccan trap (Basalt) (Ferruginous gravelly soils) with Inter Trappeans.**

Petro-Carboni-ferous :- **Sand Stone/Shale Kamathi and Barakaar Formation (Lower Gondwana) sandy soils / sand stone / shale / Talchir formation (Lower Gondwana) Black cotton soils.**

Pre-Cambrian:- **Shale / Sand stone /Lime stone (Vindhyan System) Loamy soils.**

Deccan trap is the major geological formation found in this division which covers all the earlier geographical formation of Archaean, Puranic and Gondwana types appearing in this order, so nearly all forest are situated on Deccan trap with hard gray basalt in greatly varying formations as the prevailing rock. The trap formation mainly comprises of basalt with quartz and local intrusions of quartz, schist and sandstones.

1.3.2 Basalt trap formation has hard homogenous texture of crystalline variety and its softer beds shows peculiar exfoliation type of weathering. Disintegration of basalt produces soil varying consideration in depth and physical properties. The soils vary in nature from sandy and clayey loam to hard murrum inter mixed with boulders. Murram a partially disintegrated form of trap is shallow. Reddish to light yellow in colour is found on the plateau and hill side. Clay is found generally in the low lying areas and depressions etc. Though quite fertile, it has poor drainage capability and is thus not suitable for teak. Black cotton soil is also frequently met with and supports good quality forests. All these soil types blend with each other in varying proportions and are often found containing sand, lime and gravels. This area supports the good quality teak forest. Eastern part of the Amravati Division comparing of Amravati, Morshi, Chandur (Rly), Dhamangaon, Tiwsa and Warud taluka consists of mainly basalt with quartz and local intrusion of quartz, schists and labenite. The area consists of deep black clay to light black cotton soil.

## SECTION 4 - CLIMATE :-

1.4.1 The climate of the tract is hot and dry during the summer while it is moderately cool during the winters. The summer generally sets in the month of March and lasts up to second week of June, May being the hottest month. The south-west monsoon brings the rains. The average rain fall in this forest division is 885 mm. The rainy seasons commences by the second week of June and generally end by the last week of September. The highest rainfall was recorded in the year 1997 which was 1229 mm. with 59 rainy days. While minimum rainfall of 363 mm was recorded during the year 1993 with 51 rainy days. The winter seasons commences by the second week of November and continue till February.

December generally is the coolest month. As per the data given by meteorological Department Nagpur, the minimum temperature recorded during the month of December 1997 at Amravati station was 12° C and maximum temperature in the month of May was 44.5° C. The forest fires are common. The wind velocity is moderate. Yet sometimes uprooting of teak and other shallow rooted tree species is observed. Temperature data and rain fall data is given in Appendix No.I.

## SECTION 5 : WATER SUPPLY :-

1.5.1. The complete tract is dry with low water table Wardha and Purna are only perennial river with water throughout the year.

1.5.2. Major irrigation projects are Upper Wardha Project in Morshi Taluka which has 80250 ha of area under irrigation and also supply drinking water to Amravati city.

1.5.3. Medium irrigation project are 1) Shahanur Project Anjangaon taluka. 2) Chandrabhaga and Sapan Project in Achalpur, 3) Purna Project in Chandur Bazar and 4) Chagarh Project in Morshi taluka.

1.5.4. A part from the rains, wells, tanks and network of canals are the main source of water supply for irrigation and as well as drinking water. List of water bodies is given in the Appendix No.IIIa and IIIb of Volume II.

SECTION 6 : DISTRIBUTION OF AREA :-

1.6.1. Total forest area of Amravati Division is 52031.881 Ha. distributed in Five Ranges. The legal status of forest area is as follows

TABLE 1.2  
Range wise distribution of the Area  
(Area in ha.)

Sr. No	Name of Range	Reserved Forest		Protected Forest	Unclassed forests	Total Area
		'A' Class	'C' Class			
1	Amravati	4447.664	5663.233	0.000	29.050	10139.947
2	Chandur Rly	6001.820	5289.149	0.000	54.770	11345.739
3	Morshi	5072.935	7023.990	4.940	99.370	12201.235
4	Paratwada	3591.080	4467.325	58.210	28.500	8145.115
5	Warud	6888.748	3276.527	6.630	27.940	10199.845
	Total	26002.247	25720.224	69.780	239.630	52031.881

Range, Round & Beat wise distribution of Area in Amravati Forest Division is tabulated in Appendix No.XXV.

1.6.2. The forests of this Division are covered in the following 24 toposheets of Survey of India

Topo Sheets scale 1 : 50000,

- |                |                 |             |              |
|----------------|-----------------|-------------|--------------|
| (1) 55 K/6 & 7 | (2) 55 K/7      | (3) 56 K/3  | (4) 55 G/15  |
| (5) 55 G/11    | (6) 55 G/4      | (7) 55 G/8  | (8) 55 G/12  |
| (9) 55 G/16    | (10) 55 K/4     | (11) 55 L/1 | (12) 55 H/13 |
| (13) 55 H/9    | (14) 55 H/5     | (15) 55 H/1 | (16) 55 H/10 |
| (17) 55 H/14   | (18) 55 L/2 and | (19) 55 L/6 |              |

Old sheet of scale 4" = 1 mile is

- |                            |              |                |
|----------------------------|--------------|----------------|
| (1) 55 K/3 NW/4 & NE 1 & 3 | (2) 55 K/2&6 | (3) 55 K/6 & 7 |
| (4) 55 H/13                |              |                |

And scale 2" = 1 mile (1) 110 NW & SW (Hattighat)

SECTION : 7 : STATE BOUNDARIES:

1.7.1. The outer boundaries of erstwhile "A" class Reserve Forests which are old reserves namely Chirodi, Hattighat, Shekdari, Mahendri and Lakhara are either natural features or the artificial lines created by cutting and cleaning the entire standing growth. From 2001-02 onwards new boundary pillars have been erected with permanent RCC structures at places. In case of Babul Ban (Classified as "A" class) Fodder Reserves and erstwhile "C" class Reserve Forests the artificial boundaries have been created by digging TCM of standard size but no pillars have been erected.

## SECTION : 8: LEGAL POSITION:

1.8.1. The Reserved Forests have been notified from time to time out of Govt. Waste lands by notifications occasionally after acquisition under the land acquisition Act. The first order constituting State Forests were promulgated by the Forest Rules of 1871, which includes the reserves demarcated at that time. In 1892 the Berar Forest law was introduced and under it forests have been notified from time to time. In 1911 the Indian forest Act was applied to Berar. The forests were not notified again in detailed, but by general notification the constitution of state forests under the Berar forest law was confirmed. Since then the change in the areas or classifications are notified under the Indian forest Act 1927. Details of various notifications of forests are listed in Appendix No. VI a, b & c.

1.8.2. Shekhadari, Lakhara, Mahendri and Chirodi reserves were originally constituted as 'A' class forest by the notification issued under section 40 (C) and section II of Berar forest law 1886 as amended by the Berar Forest Act of 1891.

1.8.3. Babul Ban in Amravati Forest Division are declared by Act XV of 1911 and applied to Berar with references to Hyderabad Residency order by various notifications.

## SECTION : 9 : RIGHTS AND CONCESSION:

1.9.1. The Reserved Forests are not burdened with any rights however the following concessions are permitted:-

- i) The grazing of the cattle belonging to the agriculturists of certain villages in the vicinity of the reserved forests is regulated in accordance with the grazing rules of Govt. of Maharashtra Order No.MFP-1365/32211-Y, dated 06/12/1968 and No.MFP-1371/237035-Z, dated 03/03/1973.
- ii) The villagers out of forest villages now declared as revenue villages are allowed the same privileges and concessions regarding grazing of the cattle and obtaining timber and other forest produce for their bonafide domestic use, as were to the erstwhile forest villages. List of forest villages and privilege code for Amravati district is given in Appendix No.LXII.
- iii) Agriculturists of the villages in the vicinity of the RF are given certain quantity of timber, bamboo for their bonafide domestic use at concessional rates from the coupe under working.
- iv) Minor Forests Produce is allowed to be collected by villages for their bonafide requirements from the forests on payment of charges as per schedule of rates sanctioned by the Chief Conservator of the Forests.
- v) Grazing Concessions :- Essential cattle, subjected to a maximum of two plough units per cultivator family are allowed free grazing in the forests as per Grazing Rules of the Maharashtra State dated 3 rd November 1973. Statement showing cattle population of Amravati district is given Appendix No.XVb and details of grazing passes issued etc. is given in Appendix No.XVa.

1.9.2. In Protected Forest the villages are allowed to avail the Nistar and Grazing concession as per the limit fixed by "Wajib-ul-Arz"

1.9.3. Right of way generally have not been recorded. The Chief Conservator of Forest is empowered to close any road passing through a forest block so long as a reasonable convenient alternative route is provided.

1.9.4. As mentioned in the letter dated 10 June 1985 addressed to the Special Secretary, Revenue and Forest Department by the C.C.F. (Production) the Nistar material to be supplied to the needy farmers is as below :-

- |  |   |   |
|--|---|---|
| a)      10 Poles up to 60 cms girth            | } | <b>To each needy farmer<br/>from the worked<br/>coupes.</b> |
| b)      Cart load (2M <sup>3</sup> ) fuel wood |   |   |

**This will depend upon the availability of the material and would be provided as per the modified method for provision of Nistar. The Nistar rates are decided in consultation with the District Collector and which are generally fixed at 50% of the market rate.**



CHAPTER – II

FLORA, FAUNA AND BIODIVERSITY

CHAPTER – II- A  
FOREST FLORA

SECTION: 1 : GENERAL DESCRIPTION OF THE GROWING STOCK.

2A.1.1. The forests of Amravati Forest Division belong to the formation 'Tropical Dry Deciduous Forests' as per Champion and Seth's revised Classification of forest types of India and are classified as "Southern Tropical Dry Deciduous Forests". i.e., 5A/C. Certain local variations of subtypes are noticed on account of various factors like uncontrolled heavy grazing, illicit cutting and frequent fires.

2A.1.2. The forests are found on the undulating terrain. The soil is derived from the underlying trap and in general is highly compact with little sub-soil moisture. Majority of the forest area belongs to all India Teak site qualities IV, III/IV & patches of III. Natural regeneration of Teak and its associates is inadequate in most of the areas but in old reserved forests blocks the natural regeneration is noticed at some places. The current recruits of these species are noticed at many places during the rainy season which some-how fail to establish due to heavy biotic pressure and hostile soil regime. Though the areas had been worked under coppice with reserve in previous plans operations, the extent of coppice forests is found inadequate and the standing forests are high forests with some coppice stands at places. The coppicing vigour of Teak and its associates has reduced over the years of working under 'coppice system' resulting into stunted, and multiple coppice tree crops.

2A.1.3. Under storey are not well defined and undergrowth is thin with fair growth of grasses during rainy seasons.

2A.1.4. Local variations in the forest crop intermingle and abrupt changes in the crop composition can also be noticed within the same compartment. As per Champion and Seth's classification, following local sub-types are distinguished.

Group	Champion and Seth's Classification	Local Subtype
<b>Group 5</b>	<b>Tropical Dry Deciduous Forest.</b>	
<b>Subgroup 5A.</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	
Climax Type.		
<b>1) 5A/C i a</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Very Dry Teak Bearing Forests.</b>
<b>2) 5A/C i b</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Dry Teak Bearing Forests.</b>
<b>3) 5A/E2</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Boswellia Forest (Salai Forest)</b>
<b>4) 5A/E3</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Babul Forest</b>
<b>5) 5A/E4</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Hardwickia Forest (Anjan Forest)</b>
<b>6) 5A/C3</b>	<b>Southern Tropical Dry Mixed Deciduous Forests.</b>	<b>Open Mixed Forests</b>
<b>7) 5A/DS4</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Dry Grassland.</b>
<b>8) 5A/DS2</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Dry Savannah Forest.</b>
<b>9) 5A/IS1</b>	<b>Southern Tropical Dry Deciduous Forests.</b>	<b>Dry Tropical Riverian Forest.</b>

2A.1.5. Dry Teak bearing forests: Majority of area of Amravati Forest Division is covered by both seed & coppice origin. The all India Teak site quality is III / IV the crop is stunted but of straight pole. The crop density varies between 0.2 to 0.7. Barren patches are also frequently met with. Established NR by seeds of Teak and its associates is inadequate. Natural seedling regeneration of Ain, Tendu etc. is observed to be better than Teak while coppice vigor of Teak is less than of its associates.

This type of forests is found in Shekdari, Mahendri, Lakhara and Wai reserves the division. The soil is moderately deep, abundant with stones and rocks. Soil along nalas is deep where large size of Teak are often met with. In rest of the areas small size Teak is found. Floristic composition of the sub type is as follows.

2A.1.6. Top storey:

i) Principal Associates: Dhawada - *Anogeissus latifolia*, Ain - *Terminalia alata*, Tiwas - *Ougenia oojeinesnsis*, Lendia - *Lagerstroemia parviflora*, Tendu - *Diospyros melanoxylon*, Haldu - *Adina cardifolia*

ii) Other Associates : Satpuda - *Dalbergia paniculata*, Bhera - *Chloroxylon switenia*, Kalam - *Mitragyna parviflora*, Rohan - *Soyamida febrifuga*, Salai - *Boswellia serrata*, Semal - *Bombax ceiba*, Beheda - *Terminalia belerica*, Shisham - *Dalbergia latifolia*, Bija - *Pterocarpus marsupium*, Bel - *Aegle marmelos*.

2.A.1.7. UNDER STOREY:

i) Trees : Amaltas - *Cassia fistula*, Awala - *Emblica officinalis*, Char- *Buchanaia lanzan*, Dudhi - *Wrightia tinctoria*, Ghoti - *Zizyphus xylopyra*, Palas - *Butea monosperma*, Dhaman - *Grewia tiliaefolia*, Moyen - *Lannea grandis*, Bartondi - *Morinda tinctoria*, Girguti - *Flacourtia indica*, Fetra - *Gardenia turgida*.

ii) Shrubs : Bharati - *Gymnosporia montana*, Parijatak - *Nyctanthus arbortristis*, Murad Sheng - *Helicteres isora*, Dhayati - *Woodfordia fruticosa*, Raimunia - *Lantana camara*, Tendu - *Diospyros melanoxylon*, Nirgudi - *Vitex negundo*, Tarota - *Cassia tora*.

iii) Grasses : Bhurbhusi - *Eragrostis tenella*, Kusal - *Andropogon contortis*, Pochati - *Apluda mutica*, Marvel - *Dicanthium annulatus*, Harali - *Cynodon dactylon*, Paonya - *Sehima sulcatum*.

iv) Climbers : They are few and are confined to moist localities. Palasbel - *Butea superba*, Mahul - *Bauhinia vahlii*, Pivervel - *Combretum ovalifolium*, Chilati - *Acacia pinnata*, Iruni - *Zizyphus oenoplia*, Gunj - *Abrus precatorius*, *Dioscoria bulbiferra*, *Vitex tenifolia*, Raktapiti - *Ventilago madraspattanam*.

v) Obnoxious weeds : Rantulsi - *Hyptis suaveolens*, Congress grass - *Parthenium hysterophorus*, Datura - *Datura innoxia* & *Datura metal*, have heavily invaded the open patches of forest area of Amravati Division.

2A.1.8. Degraded Scrub forests: They are actually an extension of the teak forests indicating their degradation to such an extent to be reduced to scrub forests with little or no growth of trees. It includes the entire areas managed as fodder reserves as per the previous working plan as well as the major areas under "C" class R.F. Majority of this area lies adjoining or very near to the villages and so had been bearing acute biotic pressure for long. So degradation of these forests has set in over the years mainly as a result of heavy unregulated grazing, frequent fires and heavy felling for fuel wood and other purposes. The soil is generally murummy, very dry and highly compact and lies bare without any humus. Moisture content and moisture retention capacity of these forests is very low. Trees, if found, stand apart singly or in small groups. They are generally crooked and very low in height and quite often retain the shrubby character. Thorny shrubs are found scattered along with variety of grasses.

Following species are generally found:

i) Trees and Shrubs: **Teak** - *Tectona grandis*, **Tendu** - *Diospyros melanoxylon*, **Khair** - *Acacia catechu*, **Amaltas** - *Cassia fistula*, **Palas** - *Butea monosperma*, **Bharati** - *Gymnosporia montana*, **Dhayati** - *Woodfordia fruticosa*, **Hiwar** - *Acacia leucophloea*, **Ghoti** - *Zizyphus xylopyra*, **Nirgudi** - *Vitex negundo*.

ii) Grasses: **Kusal** - *Heteropogon contortus*, **Kunda** - *Ischoemum pilosum*, **Bhurbhushi** - *Eragrostis tenella*.

2A.1.9. Babul Forest: These are widely scattered in strips and patches, occurring along river banks and small nalas near villages. The crop consists of pure Babul wherever the Babul has failed to establish itself, it has been replaced by other species. Generally two species of Babul are common 1. Babul (*Acacia nilotica*) and other is Kawarli (*Acacia planifrons*)

The pure patches of Babul occur mostly in the black cotton soil. They were planted mostly under the agri-silvicultural method. The plantations are largely successful on the black cotton soil but at the places where soil is poor and shallow it has been replaced by open scrub forest in which Hiwar (*Accacia leucophloea*), Khair (*Accacia catechu*), Bor (*Zizyphus jujuba*), Palas (*Butea monosperma*), Neem (*Azadirachta indica*) etc. have come up. Surviving Babul has become scrubby. In good black cotton soil, Babul trees attain a height of nearly 10–12 meter in thirty years. In poor soil, the plantation of Anjan (*Hardwickia binata*) and Neem (*Azadirachta indica*) have been raised successfully. In the Babul Ban situated on the banks of nalas, the main species found are Sindi (*Phoenix sylvestris*), Kahu (*Terminalia arjuna*), Hiwar (*Acacia leucophloea*) and Siras (*Albizia lebbek*). Most of the babul bans do not have under storey. In open and sparse areas *Cassia tora*, *Gymnosporia spinosa* and *Lantana camara* are found.

2A.1.10. Hardwickia Forests (Anjan Forest): **Hardwickia forests are found in patches mixed with Babul Ban along the nalas banks and near to villages and the areas where it has been planted. The established pure forests of Anjan are not common. Due to heavy lopping for leaves as fodder most of the trees are found in pollarded conditions. It is found in the areas similar to that of dry Teak but in restricted form than the associates of Teak. It is mainly found on shallow hard gravelly soils over trap but occurs on variety of other rocks mixed with other trees. It is found in pure form as well as in association with Salai, Babul, Neem, Tendu, Khair, Teak etc.**

2A.1.11. Open Mixed Forests: These forests are generally open and are of site quality IV. These are found over the major part of the Chirodi Reserve and on the tops of ridges, upper slopes and along the unfavourable aspects. It is also found on the hill slopes in Shekdari, Mahendari, Lakhara blocks with Salai as the predominant species. Heavy grazing has led to thorny plants population. Grasses are found in open areas. The following species are found:

I. Dhawada, Ain, Salai, Anjan, Bhirra, Khair, Chandan (in sparse) etc.

II. Bharati, Borati.

III. Kusal, Pochati, Paunya etc.

2A.1.12. Dry Grassland and Dry Savannah Forest: These types of forests represent the degradation stages where the forest cover has been destroyed. These are found in "A" type ramnas and in the most of the "C" class forests. The soils are shallow with underlying impermeable rock bed. The common grass species found are:- *Heteropogon contortus*, *Sehima nervosum*, *Andropogon pumilus*, *Triandra quadrivalvis* etc. The woody species are found : *Acacia catechu*, *Bauhinia racimosa*, *Butea monosperma*, *Boswellia serrata*, *Diospyros melanoxylon*, *Acacia leucophloea*, *Flacourtia indica* etc.

2A.1.13. Dry Tropical Riverian Forest: **On the banks of river and perennial nalas sandy soils often overlying more or less impervious rock liable to temporarily submerged during the shorter period of monsoon and usually retaining adequate water supplies most of the year the dry tropical Riverian forests are met with. These forests are found in strips along the river passing through the forest areas of the tract dealt with. The main species found are Sisso and Khair along with their associates like Arjuna, Dhawada, Kalam, Pongamia, Bahunia, Tendu, Palas, Tamarind, etc. Sindi (*Phoenix sylvastris*) is predominantly form in shrub as well as in tree form.**

**SECTION 2 : STATUS OF NATURAL REGENERATION –Enumeration data collection by FRSS during the year 2011-12 of Amravati Forest Division. Total of 1364 plots comprising area of 491.04 ha enumerated. Enumeration data is shown in following table reveals that 3367 seedlings of NR are available which comes to 7 seedlings per ha. This shows that status of Natural Regeneration of various species in the Division is awfully lacking.**

Table 2.1  
Table showing status of Natural Regeneration

Sr. No.	Species	R1 0.3 to 1 m	R2 1 to 3 m	R3 > 3m	Total R	Average NR/Ha.
1	Teak	636	784	264	1684	30.87
2	Ain/Saja/Sajad	84	23	9	116	2.13
3	Ajan	9	6	2	17	0.31
4	Bhera/Bhirra	888	641	208	1737	31.84
5	Kadhai	1	0	0	1	0.02
6	Apta/Bhosa/Sehra	96	53	21	170	3.12
7	Palas	4545	1563	326	6434	117.93
8	Khair	547	381	95	1023	18.75
9	Lendia	27	28	1	56	1.03
10	Salai	25	23	14	62	1.14
11	Shiras	2	1	0	3	0.05
12	Shisham	0	1	0	1	0.02
13	Others	4428	2609	733	7770	142.41
Total		11288	6113	1673	19074	349.60

**SECTION 3 : INJURIES TO WHICH THE CROP IS LIABLE :**

2.A.3.1. **Heavy uncontrolled grazing, illicit cutting and frequent fires are the major factors causing damage to the forest crop apart from few others. Each of these factors is described below separately.**

2.A.3.2. Domestic animals: **Controlled and moderate grazing does little damage to the growing stock. Continuous and unlimited grazing is harmful to the tree growth. Heavy grazing is always harmful to the soils. The trampling by cattle hardens the soils, and makes it unfavorable for reproduction of trees species by reducing soil aeration. In case of sandy soils it causes denudation. By heavy grazing young plants are browsed, trampled and crushed. It also reduces the grazing values of the forests as the palatable and succulent annual grasses are replaced by coarse perennial grasses or weeds.**

Grazing however reduces the damage done by the fire and the danger of fire. Grazing damage can be seen in the entire forest areas irrespective of classes of forests. Heavy uncontrolled grazing all over the forest areas has resulted into serious damage to the young natural regeneration of Teak and its associates. Repeated trampling of the forest flora by the cattle has resulted into a highly compact soil structure with little sub soil moisture. It has also badly affected the soil aeration. All these factors adversely affect the establishment of current recruits of Teak and other species. The sheep and goats are by and large prohibited from grazing in the forest due to their low level grazing, resulting in uprooting of seedling or rhizome.

Table No. 2.2.  
TABLE SHOWING THE NUMBER OF  
OFFENCE CASES OF FIRE AND GRAZING

Sr.No	YEARS	No. of Fire Cases	No. of Grazing Cases
1	2001-02	16	76
2	2002-03	14	51
3	2003-04	50	35
4	2004-05	17	26
5	2005-06	21	19
6	2006-07	27	06
7	2007-08	40	04
8	2008-09	22	30
9	2009-10	47	59
10	2010-11	42	45
11	2011-12	36	18
12	2012-13	36	NA

2. A.3.3. Fires: The forest of Amravati division is quite susceptible to fires during dry seasons. Recurrent fires badly damage the young natural regeneration of teak and its associates. They also damage the standing trees as well as the under growth. The fires may be accidental but usually are manmade who set the forest to fire for the collection of mahua flowers and fruits or for getting good flush of Tendu leaves etc.

2. A.3.4. Illicit Cuttings: The illicit cuttings are not so common in the division. Cuttings of the trees and lopping of the tree branches are often resorted to, both for fulfilling the domestic as well as commercial requirements but is under control by continuous patrolling of forests.

YEARS	No of cases of illicit cutting	Value of the trees cut in Rupees
2001-02	383	798928
2002-03	370	831918
2003-04	425	658677
2004-05	455	187162
2005-06	316	332237
2006-07	340	141056
2007-08	287	183292
2008-09	296	15365
2009-10	437	10639
2010-11	148	309818
2011-12	437	124612
2012-13	319	141898
2013-14	450	500282
Till June-14	62	90367

Statement of Forest Offences is at Appendix No.XII.

2.A.3.5. Wild Animals: Nilgai, Black buck, Sambhar and Chital cause damage by browsing in young woods and damaging the barks with their horns. Wild boar, Hares and Porcupines damage the plantations. Wild boar attacks on young bamboo rhizomes of plantations are noticed at many sites.

2.A.3.6. Climbers and Weeds: No considerable damage due to climbers is noticed in the forest. Weeds like Raimonia, Nirgudi, Bharati etc. are to some extent making inroads in degraded and open forests. Special scheme to eradicate raimonia is needed.

2.A.3.7. Insects: Teak defoliator (*Hyblea puera*) and Teak skeletonizer (*Hapalia machaeralis*) attack on Teak stand is common especially during the autumn and nearly 10% of the increment is lost. No permanent damage is caused but some decrease in growth of the Teak. White Grub (*Holitricae serreta*) attack is also noticeable in Teak nurseries cutting the new Teak germinating shoots. No other prominent insects attacks have been reported so far.

2.A.3.8. Drought: The entire area faces the water scarcity during the summer except for the areas adjoining to the rivers Purna, Wardha and their tributaries. The area is also prone to droughts or drought like conditions due to erratic rainfall. Drought gives a set-back to sowing and planting of Teak and other species. It also retards the coppicing - potential of the trees as well as the establishment of the young natural regeneration of Teak and its associates.

2.A.3.9. Frost: The incidence of the frost is not known to this area.

2.A.3.10. Erosion: In 'A' Class reserved forests of the tract gully erosion is noticed while in 'C' class reserved forests and other low-density forests, sheet erosion is common. At places rock is exposed and big nallas have been formed due to heavy soil erosion. To arrest the deterioration of the ground, soil and moisture conservation works need to be taken. In the interest of soil, control of erosion is a must.

2.A.3.11. Damage by storms & winds: The winds are generally moderate. Occasional storms in the pre monsoon period are also experienced which sometimes result in uprooting of isolated trees.

2.A.3.12. Mining: Removal of sand from the riverbeds in and around Forest needs to be controlled.



CHAPTER II B  
FOREST FAUNA

SECTION 1. DESCRIPTION OF FAUNA.

2B.1.1 Amravati Forest Division is not very rich in wild life. The bulk of the forest lie in scattered blocks spread all over the Division. As such these forests do not afford natural abode for a variety of wild life. Wild life is mainly confined to Wadali, Pohara, Chirodi rounds in Amravati range. The patches along Satpuda hills and Lakhara round of Morshi range. In Warud range wildlife occur in Linga and Wai rounds. The wildlife is mainly of herbivore and few carnivores. In Paratwada range wildlife is seen Hattighat area, besides the forests wildlife mainly of herbivore also occurs in Agricultural areas of district particularly in Amravati and Paratwada ranges. The herbivore mainly Blackbuck and Blue Bull occurring in large number resulted in crop raiding and become a perennial problem for farmers, thereby increasing man animal conflict.

1) Carnivora :- Panther (*Panthera pardus*), Hyena (*Hyaena hyaena*), Jackal (*Canis lupus*), Indian Fox (*Vulpes bengalensis*), Jungle Cat (*Felis chaus*) etc.

2) Herbivora :- Sambar (*Cervus unicolor*), Barking Deer (*Muntiacus muntjack*), Spotted Deer (*Axis axis*), Bluebull (*Boselaphus tragocamelus*), Common Langur (*Presbytis entellus*), Black Napped Hare (*Lepus nigricollis*), Blackbuck (*Antelope cervicapra*), Rhesus Macaque (*Macaca mulatta*), Common Grey Mongoose (*Herpestes edwardsii*) etc.

3) Omnivora :- Civet Cat (*Paradoxurus hermaphroditus*), Sloth Bear (*Melursus ursinus*), Wild Boar (*Sus scrofa*), Porcupine (*Hystrix indica*), etc.

4) Aves :- There are as many as 341 bird species that exists in the districts including migratory birds. Most common birds are Common Babbler (*Turdoides cazedatus*), Jungle Babbler (*Turdoides striatus*), Small Bee Eater (*Merops orientalis*), Red Vented Bulbul (*Pycnonotus cafer*), Spotted Dove (*Streptopelia chinensis*), Black Drongo (*Dicrusus macrocerus*), Cattle Egret (*Bubulcus ibis*), Little Egret (*Egretta garzetta*), Grey Heron (*Ardea cinerea*), Pond Heron (*Ardeola grayii*), Common Hoopoe (*Upupa epops*), Black Ibis (*Pseudibis papillosa*), Grey Jungle Fowl (*Gallus sonnerati*), Small Black Kingfisher (*Alcedo atthis*), Lesser Pied Kingfisher (*Ceryle rudis*), Red Wattled Lapwing (*Vanellus indicus*), Common Myna (*Acridotheres tristis*), Common Indian Nightjar (*Caprimulgus asiaticus*), Spotted Owlet (*Athene brama*), Roseringed Parakeet (*Psittacula krameri*), Indian Peafowl (*Pavo cristatus*), Indian Roller (*Coracias benghalensis*), Grey Wagtail (*Motacilla cinerea*), Woodpecker (*Picoides maharattensis*), Bay Backed Shrike (*Lanius vittatus*), Common Tailor Bird (*Orthobomus sutorius*) etc.

List of Fauna is at Appendix No.XLIII.

SECTION 2. HISTORY OF THE WILD LIFE MANAGEMENT IN GENERAL:

2B.2.1. Shooting and hunting of game in the Reserved Forests used to be controlled as per the following Regulations :-

- i. Shooting rules made under Section 26 (i) and 76 (d) of Indian Forests Act given in Appendix VIII.
- ii. Wild Birds and Animal Protection Act of 1912.
- iii. Central Provinces Games Act of 1935.
- iv. Restrictions on issue of Arms Licenses under Indian Arms Rules of 1924.

2B.2.2. As per Government of Maharashtra, Forest Dept. No. WLP/1056/12412-E dated, 25<sup>th</sup> May 1961, the Bombay Wild Animals and Wild Birds Protection Act (Extension and Amendment Act, 1960 XI of 1961) came into force from 1<sup>st</sup> June 1961.

2B.2.3. By dividing the area into shooting blocks and limiting the number of animals to be shot in each block, destruction of animal had been controlled to a great extent in 1950. Poaching in some areas had reduced the number of Chital, Blackbuck, Blue bulls and Wild boars as the forests are scattered and surrounded by cultivation. In severe drought of 1953-54 some animals died or could be easily shot at the water holes outside the reserved forests by the poachers. Approximately 647 sq. km. of 'A' class reserved forests were divided into 9 shooting blocks. On an average 10 shooting permits per year were issued by the Divisional Forest Officer during 1951-1961. Tigers, Panthers, Blue bulls, Sambar, Wild boar and Deer were hunted. 1951-52 census showed presence of 16 Tigers, 7 Tigresses, 6 Tiger cubs and 12 Male Panther, 6 Female Panthers and 1 Panther Cub. The *Tiger* and *Panther* population remained almost constant till 1960-61. But as on today population of Tiger is reduced is almost nil, presence of Leopards is observed in all the ranges as per cattle kill cases.

### SECTION 3. LEGAL POSITION:

2B.3.1. The first step towards the protection of wildlife was taken by including certain provisions, in this regard, in the Berar Forest Act of 1886. Under sub section 7 of section 3, the definition of forest produce incorporated the 'skins, tusks, bones and horns' and as per sub section 4 of Section 10, the residency by orders may regulate any part of the State Forests for hunting, shooting, fishing, poisoning water and setting up traps or snares.

The Berar Forest Act, 1886 as amended in 1891 provided under sub section 7(b) of section 3, the definition of forest produce is amended to includes the following when found in or brought from a forest: "Wild animals, skins, tusks, horns, bones, silk cocoons, honey and wax and all other parts or produce of animal." Sub Section 7(2)(b) of this Act after this amendment provides the punishment for anyone who hunts, shoots, fishes, poisons water or sets traps or snares, shall be punishable with the fine which may extend up to fifty rupees or, when the damage resulting from the offence amounts to more than twenty five rupees, to double the amount of such damage. Section 10(4)(iii) of this Act empowered the resident to frame the rules regarding regulation of hunting, shooting, fishing, poisoning water and setting traps and snares

2B.3.2. Vide Notification G.I.F.D. No. 2197-1-B, dated 13th October 1911, the Indian Forest Act, 1878 was also made applicable to these areas. The section 2(b)(iii) included wildlife in its definition of the forest produce. Section 25 (i) provided that any person in contravention of any rules, which the local Government may from time to time prescribe, kills or catches elephants, hunts or shoots fishes, poisons water or sets traps or snares shall be punishable with imprisonment for a term which may extend to six months or with fine not exceeding five hundred rupees or with both in addition to compensation for damage done to the forests.

2B.3.3. After the promulgation of the Indian Forest Act 1927, rules relating to wildlife regulations were framed under section 26(l) and 76(d). These were essentially to regulate hunting of wild animals and were given in the Appendix VIII of MP Forest Manual Volume II. Wild Birds and Animal Protection Act 1912 as amended in 1935 also ensured protection to certain animals and a check on hunting of others. Shooting block system of hunting was started from 1927.

Under the provisions of the two Acts, the Conservator of Forests in consultation with the DCF concerned used to declare areas having abundant game as open to hunting. The DCF accordingly used to issue shooting permits, wherein the type of game and their number allowed to be hunted together with other relevant conditions were used to be mentioned.

2B.3.4. The Bombay Wild Animals and Wild Birds Protection Act, 1951 was extended to *Vidarbha* region from 1.6.1961. Though this Act did not propose a significant change in the management of game in the reserved and the protected Forests, yet it incorporated following significant provisions:

1. Its provisions were also applicable outside the Reserved and the Protected Forests.
2. Arms license holders for sports were to register themselves with the Wildlife Preservation Officer.
3. This Act prescribed a closed season for hunting and classified game into four categories, viz. small game, big game, special big game, and pet animals.
4. It also sought to control transaction in trophies and other wildlife products.
5. Wildlife Advisory Board was constituted under this Act to advise the Government on various important matters concerning wildlife.

#### DEVELOPMENTS AFTER 1972:

2B.3.5. At the national level, the Indian Board for Wildlife was constituted in 1952. Its main object was to devise ways and means for conservation of wildlife through co-ordinated legislative and practical measures and setting up of National Parks and Wildlife Sanctuaries. A comprehensive and unified National and State Park Act, 1971 was passed which provided for appointment of an Advisory Committee to advise in regard to the constitution and declaration of National Parks and Sanctuaries and formulation of policy for their administration and management. The Parliament then enacted the Wildlife (Protection) Act, 1972, which came into force in the State of Maharashtra with effect from 1st June 1973.

With this, other Acts relating to any matter contained in this Act and in force in the State stood repealed. This Act as amended from time to time as well as the various regulations made under this Act and guidelines issued by the Central and the State Government provide for establishment of a network of National Parks and Sanctuaries representing various habitats and for giving protection to all type of wildlife in the state. These provisions also address issues relating to the management of wildlife outside the Protected Areas. Following rules have so far been enacted under the relevant sections of this Act:

- i) The Wildlife (Stock Declaration) Rules, 1973 (became effective in Maharashtra with effect from 1.6.1973).
- ii) The Wildlife (Transactions and Taxidermy) Rules, 1973 (became effective in Maharashtra w.e.f. 1.6.1973).
- iii) The Wildlife (Protection) (Maharashtra) Rules, 1975 (became effective from 6.3.1975).
- iv) The Wildlife (Protection) Rules and Licensing (Additional matters for consideration) Rules, 1983 (became effective from 13.4.1983).
- v) Wildlife (Protection) Rules, 1995
- vi) Wildlife (Specified Plants-Condition for Possession by License) Rules, 1995
- vii) Recognition of Zoos Rules, 1992.
- viii) Declaration of Wildlife Stock Rules, 2003.
- ix) Maharashtra Wildlife Protection Rules 2014.

2B.3.6. Besides the above specific legal framework available for wildlife management, provisions contained in Indian Forest Act, 1927, Forest Conservation Act, 1980 and The Environment (Protection) Act, 1986 may go a long way in protecting and conserving the biodiversity of this Division. Clearance under the Environment Protection Act, 1986 from environmental angle is required from the Govt. of India for any project (other than those relating to improvement of forests and particularly the projects relating to industrial Activities damaging the environment of Protected Areas) including an industry located within 10 km from these PAs. Hence, such clearance is obligatory in case of many of the projects involving forest land of this division because large part of its forests is located in the vicinity of protected areas.

#### SUMMARY OF WILDLIFE (PROTECTION) ACT. 1972

2B.3.7. The Wildlife (Protection) Act 1972 provides for effective protection and conservation of wildlife. Act provides severe restriction on hunting and wildlife related trade along with severe punishment including up to seven years imprisonment in case of hunting of Schedule-I and part II of Schedule-II. The Act has been amended from time to time and its amendments done in 1991 and recently in 2002 have brought far-reaching changes in it.

2B.3.8. The scope of the Wildlife (Protection) Act, 1972 has been widened appreciably, which can be summarised as below :

(i) The objective of Wildlife (Protection) Act 1972 is for protection of Wild animals, Birds and Plants with a view to ensuring the ecological and environmental security of the country.

(ii) The words and phrases related to hunting like game and game reserve are now totally removed from wildlife management.

(iii) New categories of PAs have been added. 'Chapter IV - Sanctuaries, National Parks and Closed area', has been changed to 'Chapter IV - Protected Areas' and Protected area has been defined under Section 2(24A). These categories are-

- 1) Sanctuary (Section 2(26) and 18)
- 2) National Park (Section 2(21) and 35)
- 3) Conservation Reserve (Section 36A)
- 4) Community Reserve (Section 36C)

(iv) The category of game reserve was deleted from this chapter by the 1991 amendment and that of closed area has now been deleted through the 2002 amendment.

(v) The 1991 amendment brought zoos under its jurisdiction and the 2002 amendment makes norms for proper upkeep of animals applicable to zoos, also applicable to circus and rescue centers. Thereafter amendment of 2006 has given way to establish National Tiger Conservation Authority and Tiger Conservation Foundation for Project Tiger areas and clearly directed to prepare Tiger Conservation Plan for Project Tiger areas.

2B.3.9. A wild animal can be hunted only under special and exceptional circumstances and that too after following elaborate procedure prescribed for the purpose.

2B.3.10. When an animal included in the schedule I becomes dangerous to *human life* or is disabled/ diseased beyond recovery, it may be hunted but while doing so, it will be killed only when it can not be captured, tranquillized or translocated and further such captured animal shall not be kept in captivity unless it is established that it can not be rehabilitated. Animals belonging to other schedules however can be allowed to be hunted in cases where they become dangerous to *human property*.

2B.3.11. Penalties for the wildlife offences have been made much more severe and amendments done in the year 2002 have inserted a new chapter "V A- Forfeiture of Property Derived from Illegal Hunting and Trade" containing 25 sections. These provisions can be invoked if an illegal property has been acquired by carrying on business involving animals included in Schedule-I and Part II of Schedule-II of Wildlife Act.

2B.3.12. No one is allowed to carry on trade relating to any animal or animal article etc. included in Schedule-I and Part II of Schedule-II and severe restrictions are put even on the trade relating to other wild animals.

2B.3.13. The Wildlife (Protection) Act, 1972 does not allow acquiring of any wild animal, animal article etc. now, yet a large number of individuals do possess the same having owned it prior to promulgation of this Act. The Act, therefore, required such individuals to declare these articles within 30 Days of coming into force of this Act. CWLW was to issue ownership certificate as per those declarations and after doing the necessary scrutiny. This did not happen due to lack of publicity of the Act and consequent ignorance among the public in general about its relevant provisions

2B.3.14. The 2002 amendment to the Act has identified this problem and a new section '40A-Immunity in certain cases' has been inserted to provide another chance to such holders of captive animal/animal article etc. Declaration of Wildlife Stock Rules, 2003 have been promulgated to prescribe the time, form and the manner through which such declarations can be made and ownership certificates can be obtained even now.

According to these rules, declaration under Section 40A could be done within 180 days from the date of coming into force of these rules. The CWLW shall, as far as possible, decide such cases within 6 months from the date of declaration. Except elephant no person can acquire receive, keep in his control, custody or possession any captive animal, animal article, trophy or uncured trophy specified in Schedule I or Part II of Schedule II, except by way of inheritance.

Delegation of Powers to Forest Officers.

2B.3.15. The CWLW of the State has been authorised to delegate his powers, except those which authorised him to permit hunting of an animal under Schedule I that has become dangerous to human life or is so disabled or diseased as to be beyond recovery, under various sections of the Act to various forest officers with previous approval of the State Government. Besides the State Government has conferred powers of Wildlife Wardens (Govt. Order No.WLP/1077/86854/F-1, dt.5.5.1977) as follows:

1) Chief Wildlife Warden (CWLW)	PCCF(WL)
2) Addl. Chief Wildlife Warden	CCF/CF/CF(WL)/RM
3) Dy. Chief Wildlife Warden	DCF/DFO/DM
4) Wildlife Warden	ACF
5) Asstt. Wildlife Warden	RFO

2B.3.16. The delegation of powers was ordered vide CCF (Wildlife) letter No.D-22 (D)(1)/C.No.117/1180, dt. 18.8.1993. The delegation of power empowers the forest officers in the field for the various purposes narrated in the Act and the manner in which they are to be achieved. This may be summarized as below:

- 1) Receive declaration of animal/ animal article and applications for different purposes under the Act. Also power to deal with matters ancillary to the above.
- 2) Deal with wildlife offences as well as their compounding.
- 3) Registration of arms license holder.
- 4) Power to make complaint in the court.
- 5) Power to grant permit for hunting of an animal other than specified in schedule-I, which has become dangerous to human life and property.
- 6) Power to deal with a wild animal live or dead, which is a government property.

2B.3.17. As the Wildlife (Protection) 1972 is further amended from time to time the delegation of powers under amended act is revised and again issued by Govt. of Maharashtra vide notification dated 02/08/2013. Under this delegation powers are given to Additional Principal Chief Conservator of Forests, (Wildlife), CCF (Territorial and Wildlife), CF (Wildlife), DCF (Territorial, Wildlife, FDCM), ACF (Territorial, Wildlife, FDCM), RFO (Territorial, Wildlife, FDCM) under various sections of Wildlife (Protection) Act 1972 as mentioned in the notification. Hon. Wildlife Warden are also vested with powers under section 55(b) thereby, the court can take cognizance of offence as reported by Hon. Wildlife Warden. Any person (that is, common man) is authorised to make a complaint regarding the commission of a wildlife offence who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Central Government or the officer authorised in this behalf and the competent court shall take cognizance of such complaint.

2B.3.18. The 2002 amendment enhanced a provision of reward payment to 50% of fine (imposed under Section 51) or of compensation (accepted and paid while compounding of a case under Section 54) to a person who renders assistance in detection of offence/apprehension of offenders and the amendment of 2002 has now introduced the provision under Section 60B by which Chief Wildlife Warden may order payment of reward up to Rs.10,000/- to the informer, that is, the person who renders assistance in detection of offence or the apprehension of the offenders.

2B.3.19. **Definition of livestock** has been appreciably widened to include animals like camel, donkey, horses, mules and pigs, and 2002 amendment has specifically made a mention under this definition that livestock does not include any animal included under Schedule-I to V of the Act.

2B.3.20. **The 1991 amendment to the Act** also addressed to the conservation of floral biodiversity, although present scheduled plants (under the schedule VI) are not found in Maharashtra.

2B.3.21 **Zoos** have been brought under the purview of the Act. No zoo can operate without being recognized by the Central Zoo Authority and no new zoo can be established without obtaining prior approval of this authority. CZA has framed regulations providing elaborate procedure, norms and set of conditions under which a zoo can be established and run. A zoo under the Act means a facility where captured animals are kept for exhibition to the public and it also includes Circus (where such animals are used wholly or mainly for performing tricks) and rescue centers.

2B.3.22. **All the arms license holders within 10 km radius from the PA boundary** are to be registered with Wildlife Wardens and no new license in this area can be issued without prior concurrence of the Chief Wildlife Warden.

2B.3.23. **The Wildlife (Protection) Act, 1972** does not recognise rights and concessions of local people over wild animals or articles made from them except things like peacock feathers. In fact any wild animal found live or dead and or animal articles etc. are a government property. However, State Wildlife Advisory Board may advise the State Government in regard to harmonising the needs of the tribals and other dwellers of the forest with protection and conservation of wildlife. The act also provides that any forest produce removed from a PA can be used for meeting the bonafide needs of people living in and around the PA but the same cannot be sold for commercial purposes.

2B.3.24. **Only Central Govt. can alter entries in the various Schedules.** However, the Act empowers the CWLW to state to take appropriate management measures including hunting for an animal/group of animals (of schedule II, III, IV) as a part of scientific management of such animals which have become abundant in a localised area. This may include translocating such animal/group of animals for the purpose of population management from a specified area to other suitable places.

2B.3.25. **The Wildlife (Protection) Amendment Act, 2002** has inserted Section 36A to 36D for constitution and management of Conservation and Community Reserves. Thus, the areas linking various PAs may be formed into a Conservation Reserve and private/ community lands, wherein the owner (individual/community) volunteers to conserve wildlife, may be formed into a Community Reserve.

2B.3.26. **Sanctuaries** have been strengthened and brought almost at par with National Parks vide amendments in 1991 and 2002. Salient features are as follows,

- **There is a complete ban on sale of forest produce recovered from PAs;**
- **No construction of tourist facilities or establishment of Zoos etc. inside a PA without prior approval of the National Board for Wildlife is allowed;**
- **Forest officers have been empowered to remove encroachments from PAs;**
- **Boundary of PAs cannot be altered without National Board's recommendation.**

2B.3.27. Tourism is not recognised as an objective in this Act. Nor is it so under forest Acts, namely Indian Forest Act, 1927 and Forest Conservation Act, 1980. Tourism facilities on the other hand within a PA can be established only after concurrence from National Board for Wildlife. National Board for Wildlife is also expected to frame policies on promoting wildlife conservation, impact assessment of various projects as well as matters relating to resolution of disputes in PAs.

The National Wildlife Action Plan, 2002-2016 however discusses eco-tourism but in relation to PAs where it is supposed to be subservient to conservation. However, tourism in forest areas outside the PAs is also gathering momentum and hence the strategy and Action plan developed under this document (National Wildlife Action Plan, 2002-2016) may become a guideline for forest tourism albeit with lesser restrictions.

#### MAHARASHTRA WILDLIFE RULES.

#### SUMMARY OF MAHARASHTRA WILDLIFE (PROTECTION) RULES, 2014 :-

In exercise of the powers conferred by sub-sections (1) and (2) of section 64 of the Wildlife (Protection) Act, 1972 (53 of 1972) and all other powers enabling it in that behalf and in supersession of the Wildlife (Protection) (Maharashtra) Rules, 1975, Sec 1. Govt. of Maharashtra notified Wildlife Protection Rules, 2014 vide notification dated 03/03/2014.

#### CHAPTER – II :- STATE BOARD FOR WILDLIFE (Section 6)

##### **Rule 3. Term of office**

- (1) members other than ex-officio - three years extended for one year.
- (2) The member of the State Legislature nominated shall cease to be a member of the Board on his having ceased to be the member of the Legislature.
- (3) The casual vacancies to be filled in by nomination by the State Government with the approval of the Chairperson for the remaining period of the term of a member in whose place he has been nominated.

##### **Rule 4. Resignation by member.—**

- (1) A member, other than ex-officio may resign by writing under his hand addressed to the Chairperson.
- (2) The vacancy due to the resignation deemed to be created from the date on which such resignation is accepted or on the expiry of thirty days from the date of receipt of resignation, whichever is earlier.
- (3) The power to accept resignation of a member of the Board shall vest in the Chairperson.

##### **Rule 5. Removal of member.—The State Government may, on the recommendation of the Chairperson, remove any member of the Board if such member,—**

- (a) is, in the opinion of the State Government, unfit to continue in office by reason of infirmity of mind or body ; or
- (b) has become of unsound mind and stands so declared by a Competent Court ; or
- (c) is adjudged insolvent ; or
- (d) is convicted of a criminal offence involving moral turpitude ; or
- (e) fails, without leave of the Chairperson, to attend more than three successive meetings of the Board :

Provided that, no such member shall be removed from the office unless he has been given reasonable opportunity to furnish his explanation.

##### **Rule 6. Filling in of casual vacancy.—**

- (1) When a member resigns or dies or is removed from the office or becomes incapable of acting, the State Government may, nominate a person to fill the vacancy.
- (2) A person nominated to fill in the vacancy shall hold office so long as the member in whose place he is nominated would have held it, if the vacancy had not occurred.

**Rule 7. Disclosure of interest by members.—**

If any member of the Board or his family members have any interest in a proposal submitted for consideration of the Board, the member shall disclose the extent of his interest in the proposal, in writing, to the Member-Secretary before the meeting.

**Rule 8. Allowances.—**

(1) The members of the Board, who are members of the State Legislature, shall be entitled to draw travelling and daily allowances in accordance with the law relating to allowances of members of the State Legislature.

(2) Members, other than the members, ex-officio but not belonging to the category in sub-rule (1) of the Board shall be entitled to travelling and daily allowances in accordance with scale I, in clause (b) of sub-rule (I), under section I of Appendix XLII-A of the Maharashtra Civil Services Rules, 1974, Volume II, as applicable from time to time.

(3) The travelling allowance bills shall be presented to the Member-Secretary of the Board, who shall, after scrutiny thereof, countersign the bills and disburse the allowances.

**CHAPTER – III :- HUNTING OF WILD ANIMALS (Section 12)**

**Rule 9. Grant of permit for hunting of wild animals.—**

(1) Every person desiring to hunt any wild animal for any special purpose shall obtain a permit from the Chief Wildlife Warden.

(2) The application to the Chief Wildlife Warden is in Form I.

(3) A fee of rupees five hundred if permit is for a period of one month or rupees five thousand for a period which is more than a month but not exceeding one year.

(4) Chief Wildlife Warden may grant or reject the application.

(5) Where the application is rejected, the fee shall be refunded after deducting the processing charges (10% of the application fee).

(6) Chief Wildlife Warden to grant a permit for special purposes, in Form II.

**Rule 10. Conditions of permit for hunting wild animals.—**

(1) Every person holding permit shall submit a report of his collection and send a copy of such report, each to the Chief Conservator of Forests and Deputy Conservator of Forests of the area.

(2) The permit holder shall, produce for inspection the entire collection made by him.

(3) The permit holder shall not export his collection outside the State of Maharashtra, without the written permission from the Chief Wildlife Warden.

(4) The permit holder shall abide by the conditions, if any, additionally mentioned by the Chief Wildlife Warden while issuing the permit.

**CHAPTER – IV :- PROTECTION OF SPECIFIED PLANTS**

(Sections 17-B, 17-C, 17-D, 17-E, 17-F, 17-G)

**Rule 11. Grant of a permit to pick, uproot, acquire or collect or transport any specified plant.—**

(1) Application to the Chief Wild Life Warden in Form III.

(2) A fee of rupees five hundred if the permission is required for a period of one month or rupees five thousand when it is required for a period more than a month but not exceeding one year.

(4) Refund fees if the application is rejected after deducting processing charges (10%)

(5) Chief Wildlife Warden to grant a permit for special purposes in Form IV.

**Rule 12. Other conditions for grant of special purpose permit for collection of specified plants.—**

(1) shall submit a report of his collection and send a copy of such report, each to the Chief Conservator of Forests and Deputy Conservator of Forests.

(2) The permit holder shall produce for inspection the entire collection made

(3) The permit holder shall not export his collection outside the State of Maharashtra without the written permission

(4) The Chief Wildlife Warden shall mention the conditions under which the permission for the collection of specified plants has been granted.

**Rule 13. Licence for cultivation of specified plants**

- (1) application to the Chief Wildlife Warden in Form V.
- (2) A fee of rupees five thousand for a period of one year.
- (3) grant licence to the applicant in Form VI.
- (4) Refund fees after deducting processing charges (10%)

**Rule 14. Licence for dealing in the specified plants.**

- (1) application to the Chief Wildlife Warden or the authorized officer in Form VII.
- (2) fee of rupees five thousand for a period of one year.
- (3) grant licence specifying the premises and the conditions in Form VIII.
- (4) Refund fees after deducting processing charges (10%)

**Rule 15. Other conditions for grant of licence for cultivation of specified plants and dealing in specified plants or parts or derivatives thereof**

- (1) The licensee shall keep the stock of specified plants or part or derivative in the premises approved by the Chief Wildlife Warden.
- (2) Maintain a register in Form IX.
- (3) Register to be maintained up-to-date, before closing the business for the day.
- (4) Submit monthly returns in Form X and a true copy of the entries in the relevant register to the Chief Wildlife Warden and authorized officer.
- (5) The return shall be submitted before tenth of every month.
- (6) The licence may be renewed by the Chief Wildlife Warden. Application in the same form before fifteen days of the expiry of the period of licence.
- (7) The Chief Wildlife Warden or the authorized officer may grant renewal or reject the same.
- (8) All relevant conditions in rules 13 and 14 shall apply *mutatis mutandis* in case of renewal of license also.

**CHAPTER V :- PROTECTED AREAS**

**(Sections 21, 22, 28, 31, 33-A, 34, 35)**

**Rule 16. Claims to be made upon proclamation by the collector-**

Where the Collector who has been appointed by the State Government as per section 18B publishes the proclamation under section 21, any person claiming any right mentioned in section 19, may prefer before such Collector, within a period of two months from the date of such proclamation, his written claim in Form XI.

**Rule 17. Notice to the claimant**

On receipt of the claim made under rule 16, the Collector or any other officer who has been appointed by the State Government as per section 18B, shall serve a notice upon the claimant requiring him to appear at such place and on such date, as may be specified in the notice, either in person or through an agent, authorized by him in this behalf, and to produce evidence, oral or documentary, in support of the claim.

**Sec18 (1). Entry in a sanctuary or national park for purposes of section 28(1) (d) and (e).**

- (a) Every person desiring to enter any sanctuary or national park for the purpose of tourism or transaction of any lawful business with any person residing therein, shall obtain the necessary permit.
- b) A permit shall be in form XII and be issued by an officer authorized by the Chief Wildlife Warden on payment of a fee
- (c) The fee in respect of the permit for entry shall be as follows, namely :—
  - (i) Indian citizens, Rs. 30/- per head, per day.
  - (ii) Other than Indian citizens, Rs. 60/-per head, per day.
  - (iii) Students who are Indian citizens, Rs. 15/- per head, per day.
  - (iv) Students who are other than Indian citizens, Rs. 30/- per head, per day.
  - (v) The rates prescribed in (iii) and (iv) above shall be applicable only on production of valid Identity Card in proof of the visitor being a student.
  - (vi) A child below five years shall be exempted from payment of the fee.
  - (vii) Person(s) specifically permitted by the Chief Wildlife Warden or the authorized officer shall be exempted from payment of the entry fee in a sanctuary or national park

- (d) The fee in respect of the permit for entry of vehicle shall be as follows:
- (i) Light motor vehicle, such as a car or jeep, Rs. 100/- per vehicle, per day ;
  - (ii) Heavy motor vehicle, such as a bus, lorry or truck, Rs. 150/- per vehicle, per day
  - (iii) Motorcycle or tricycle, including motor scooters and cycle with attachment, for propelling the same by mechanical power, Rs. 25/- per vehicle, per day.
  - (iv) Vehicle(s) used by person(s), specifically permitted by the Chief Wildlife Warden or authorized officer shall be exempted from payment of the fee.
- (e) The fee for operating a camera shall be as follows, namely :—
- (i) Still camera operated by an Indian citizen, Rs. 100/- per camera, per day,
  - (ii) Still camera operated by other visitors Rs. 200 per camera, per day.
  - (iii) Cine-camera operated by an Indian citizen, Rs. 250/- per camera, per day.
  - (iv) Cine-camera to be operated by other visitors Rs. 500/- per camera, per day.
- (v) These fees for operating camera are for the purpose other than commercial use. Use of such photograph or cine-output for commercial purpose is prohibited without prior written permission of the Chief Wildlife Warden or the authorized officer.
- (f) A permit referred to in sub-rule (1), shall be valid for the period specified therein.
- Rule 18 (2).** Entry in a sanctuary or a national park for the purposes of section 28 (1) (a), (b) and (c)
- (a) Every person desiring to enter a sanctuary or national park, for the purpose of investigation or study of Wildlife and purpose ancillary or incidental thereto or for professional photography or scientific research, shall obtain a permit from the Chief Wildlife warden or an authorized by him.
  - (b) The fee for operating a camera, where photography is for scientific research, investigation and study of wildlife and purposes ancillary or incidental thereto, shall be as follows, namely :—
    - (i) Still camera to be operated by Indian citizens not exceeding five in number, Rs. 500 per camera, per day, and for other persons Rs 1000/- per camera, per day.
    - (ii) Cine-camera, operated by Indian citizens not exceeding five in number, Rs.5,000/- per camera, per day, and other persons, Rs. 10,000/- per camera, per day.
    - (iii) Camera used for the study of wildlife, specifically permitted by the Chief Wildlife Warden shall be exempted from payment fee.
  - (c) The fee for operating a camera, where photography is for professional purpose, shall be as follows:-
    - (i) still camera operated by an Indian citizen, Rs. 2,500/- per camera, per day other persons, Rs. 5,000/-
    - (ii) cine-camera to be operated by an Indian citizen, Rs. 10,000/- per camera, per day, other persons, Rs. 20,000/- per camera, per day.
  - (d) The fee for operating a camera, where photography is for or in connection with commercial movies, shall be as follows:-
    - (i) For shooting in Mini Train and related sites in Sanjay Gandhi National Park, Rs. 45,000/- per day per party;
    - (ii) For shooting Lion and Tiger safari area and in the vicinity of the Log-Hut in Sanjay Gandhi National Park, Rs. 40,000/- per day per party ;
    - (iii) For shooting in Nursery, Gandhi Temple and other sites in Sanjay Gandhi National Park, Rs. 25,000/- per day per party ;
    - (iv) For shooting in other sanctuaries or national parks in the State, Rs. 25,000/-per day, per party.
  - (e) The fee specified in sub-rule (2) shall be payable in advance.
  - (f) For professional photography and commercial movies in addition to the fee, a deposit of Rs. 10,000 shall be recovered in advance. The same shall be refunded on fulfillment of the terms and conditions laid down in this behalf.
  - (g) The permit referred to in the sub-rule (2) shall be in form XIII.
- Rule.18(3).**  
Fees shall be increased by ten percent every year from the 1st January.
- Rule.18(4).**  
These rates shall not be applicable in case of a Tiger Reserve and the Tiger Conservation Foundation shall regulate entry to a tiger reserve.

**Rule.18(5). General conditions governing the issue of permits:**

(a) The permit shall not entitle any person to free accommodation in any Government building, situated within the limits of the sanctuary or national park.

(b) Any officer or employee of the Forest Department may require any person to stop within the limits of the sanctuary or national park for the purpose of checking and may demand for inspection, the permit. Every person shall produce the permit for inspection.

(c) No person shall be allowed to enter a sanctuary or a national park with any weapon or ammunition, except with the prior permission in writing, of the Chief Wildlife warden.

**Rule.18(6). Cancellation of permit.—**

Where a holder of a permit commits a breach of any of the provisions of the Act or the rules there under or of any of the conditions specified in a permit.

**Rule.19. Power to exempt.—**

Where the State Government considers it necessary or expedient so to do in the public interest, it may, by order, exempt any person or class of persons from payment of any fee payable under rule 18.

**Rule.20. Immunization of Livestock -**

(1) The Chief Wildlife warden or the authorized officer may direct the concerned local authorities of the area falling inside or within five kilometers of Sanctuary or National Park, as the case may be to submit detailed information regarding cattle in possession of each person in the said area under the jurisdiction of such local authorities once in a year.

(2) The Chief Wildlife Warden or authorized officer may direct the officer-in-charge of the Animal Husbandry and/or any other authority responsible for immunization of cattle in the District to carry out immunization of the entire cattle population in villages falling inside or within five kilometers of Sanctuary or National Park in a time bound manner.

(3) The Chief Wildlife Warden or authorized officer may direct to cancel grazing permission within the Sanctuary in respect of any cattle which has not been immunized within the period specified in sub-rule (2).

(4) The officer-in-charge of the Animal Husbandry and / or any other authority responsible for managing veterinary services to livestock in the District shall report any outbreak of communicable diseases of the livestock to the concerned authorized officer.

**Rule.21. Registration of certain persons in possession of arms**

(1) Every person residing in or within ten kilometers of a sanctuary or National Park and holding a license granted under the Arms Act, 1959, or exempted from the provisions of that Act and possessing arms, shall apply in Form XIV accompanied with a fee of Rs 500/- for such registration to the officer-in-charge of the sanctuary or National Park.

(2) (a) The officer-in-charge of the sanctuary or N.P. shall, register the name of the applicant in Form XV.

(b) A register shall be maintained for this purpose and separate page in the register shall be allotted to every person.

(3) Where the holder,—

(a) commits any offence under the Act or the rules made there under, the officer-in-charge of the sanctuary or National Park shall make an entry to that effect in the register and where such officer is satisfied that such person has committed the said offence, on occasions more than one, he may take steps as he considers necessary, to move the authority concerned for cancelling the license.

(b) transfer his arms to another person by way of sale, gift or otherwise, he shall intimate of the same within a period of fifteen days of such transfer.

(c) changes his residence to another place shall intimate his new address and other relevant details within fifteen days from the date of such changes.

(4) Where the holder of license dies, his successor or legal representative shall, as soon as possible, after such death, intimate the fact to the officer-in-charge of the sanctuary or National Park.

**CHAPTER VI :- TRADE OR COMMERCE IN WILD ANIMALS, ANIMAL ARTICLES AND TROPHIES**

(Sections 40, 41, 43, 44, 45, 47, 48, 48-A, 49, 49-A, 49-B, 49-C)

**Rule.22. Inquiry and preparation of inventories.**

**Rule.23 Certificate of ownership.**

**Rule.24. License for dealings in trophy and animal articles**

**Rule.25. Renewal of license**

**Rule.26. Maintenance of records.**

**Rule.27. Maintenance of registers.**

**Rule.28. Submission of returns.**

**CHAPTER – VII :- REWARDS TO PERSONS (Section 60-A)**

**Rule.29. Payment of Reward:**

(1) Payment towards reward shall be made out of the grants provided for the purpose by the government, after the Chief Wildlife Warden is satisfied that the person to whom reward is to be given has rendered assistance in detection of an offence under the Act or the rules there under or arrest of a person involved in such offence, by providing information leading to detection of such offence or arrest of such person.

(2) An officer not below the rank of Deputy Conservator of Forests/ Divisional Forest Officer/ Sub-Divisional Forest Officer in-charge of a Forest Division or independent sub-division, as applicable, may recommend payment of the reward in a confidential report addressed to the Chief Wildlife Warden providing necessary details along with relevant documents leading to detection of an offence stated in sub-rule (1) or arrest of a person involved in such offence.

**SECTION 4. WILDLIFE CENSUS: Wildlife Census is carried out in territorial Divisions once in four year. While in Protected Areas it is carried out every year. The census figure of Amravati Division is as follows;**

Table No. 2.8.  
Census 2011

Sr. No.	Common English Name	Scientific Name	Nos.
1	Jungle cat	<i>Felis chaus</i>	09
2	Hyena	<i>Hyaena hyaena</i>	06
3	Sloth Bear	<i>Melursus ursinus</i>	10
4	Fox	<i>Vulpus benghalensis</i>	15
5	Sambar	<i>Cervus unicolour</i>	33
6	Blue bull/Rohee	<i>Boselaphus tragocamelus</i>	158
7	Spotted Deer/Chital	<i>Axis axis</i>	121
8	Barking deer	<i>Muntiacus muntjack</i>	24
9	Common Langoor	<i>Presbytes entellus</i>	319
10	Wild Boar	<i>Sus scrofa</i>	262
11	Black Napped Hare	<i>Lepus nigricollus</i>	19
12	Peacock	<i>Pavo cristatus</i>	159

**SECTION 5: INJURIES TO WILDLIFE:**

**POACHING:**

2B.5.1. In spite of stringent provisions as aforesaid, poaching continues to be the most important reason for reduction of wildlife in the Division. Poachers use different methods such as capturing, killing, poisoning, snaring, and trapping for hunting wild animals. The animals are particularly vulnerable during summer, when number of water availability drastically reduced and also water in a water hole recedes to minimum. In 2013 one Tiger (*Panthera tigris*) reported dead in Warud Range.

2B.5.2. Blackbucks are present in fairly large numbers in Amravati and Paratvada ranges. Some cases of poaching of Black bucks have also occurred in these areas. A statement showing cases of poaching in the Division is at Appendix No.XVI.

#### DISEASES TO WHICH WILDLIFE IS LIABLE:

2B.5.3. The livestock from the villages in the vicinity of the forests should be regularly vaccinated against the contagious diseases specially FMD (foot and mouth diseases). As the livestock goes in forest and there are chances of various diseases through contact or by water to the wildlife. FMD has a potential to wipeout large population. The other diseases which may occur are 1) Anthrax, 2) Rabies, 3) HS, 4) Canine distemper, 5) Rinderpest.

#### FIRES

2B.5.4. Forest fire is a major cause for reduction in natural regeneration of various species. As most of the seed and seedling are destroyed in thereby reducing the food availability drastically for the herbivores. Recurrence of fire damages the habitat. In short fires have a dangerous effect on biodiversity of the area.

#### MAN - ANIMAL CONFLICT:-

2B.5.5. The carnivores, particularly Leopards kill domestic cattle grazing in the forests also cases of human injury and even death due to attacks from wild animals. A statement showing number of human beings attacked by wild life is at Appendix No.XVII. Poisoning the carcass to show vengeance to kill wild animal and cases of electrocution by the villagers have also been reported. Such activities on the part of local people grave threats to wildlife. Therefore Govt. of Maharashtra has evolved policy of compensating for the loss of human life as well as injuries cause due to attack, cattle kill compensation and compensation for crop damage by wildlife. The details are as follows;

#### COMPENSATION FOR THE LOSS OF LIVESTOCK

2B.5.6. The scheme, which was introduced for the first time in 1971, covers the loss of Cow, Buffalo, Bullock, Sheep, Goat and other livestock (as per definition given under Section 2(18A)) due to attack of a Tiger, Panther or any other wild animal. The present rates of compensation as per the GR No.WLP-1008/C.No.270/ F-1 of 02.07.2010 are as follows and compensation is to be paid within one month.

1] Cow , Buffalo, Bullock	75% of the market price or Rs.10000/- and whichever is less
2] Sheep , Goat, other livestock	75% of the market price or Rs.3000/- and whichever is less.

The conditions to be fulfilled are:

- 1) Death to be reported within 48 hours.
- 2) Carcass is not to be removed before panchnama is made.
- 3) No death of any wild animal within 10 km radius area in the next 6days.
- 4) Immediate investigation by Range Forest Officer as to the wild animal, which killed the cattle as well as likely amount of compensation.
- 5) Compensation to be sanctioned by an officer not below DCF/DFO.
- 6) No compensation in case the livestock was grazing illegally.

Table No. 2.4 shows that in general there is increase in the cattle kill cases from the year 2005-06.

Table No.2.4.  
Table showing amount of compensation paid for  
Cattle kill cases. (Amount in Rs.)

Sr. No.	Year	Nos. of Cases	Amount
1	2003-04	-	-
2	2004-05	-	-
3	2005-06	2	1700
4	2006-07	2	6750
5	2007-08	1	2625
6	2008-09	7	18000
7	2009-10	2	12750
8	2010-11	6	9187
9	2011-12	1	3375
10	2012-13	9	29500
TOTAL -		21	54387

COMPENSATION FOR LOSS AND INJURY TO HUMAN LIFE

2B.5.7. Introduced through GR dated 27.1.1986, the scheme covers death as well as injury including minor injury caused to any individual in an attack by a wild animal. Any such attack by Tiger, Panther, Sloth Bear, Bison, Wild Pigs, Wolf, Hyena, Jackal and wild dogs is covered under the scheme. Present rates of compensation have been fixed through GR No.WLP-2012/C.No.337/F-1, dt.30.03.2013 and dt.15.04.2013. These are as follows:

1)	Death(Adult as well as minor)	Rs.5.00 lakhs to legal heir
2)	Permanent Disability	Rs.4.00 lakhs to the Individual injured
3)	Major injury	Rs.1.00 lakhs to the Individual injured
4)	Minor injury	Cost of treatment preferably in Govt. hospital but in case of Private hospital limited up to Rs.7,500/- per individual

Following are the conditions put for claiming and deciding above compensations:

- 1) Such attacks should not have occurred when the individual was indulging in violating the Wildlife (Protection) Act 1972.
- 2) Relative/friend should report the attack within 36 hours.
- 3) Police/Forest officer to investigate within 3 days.
- 4) Death/injury due to wild animal is to be certified by the Govt. medical officer.
- 5) Compensation due to death is to be given only to a legal heir and compensation due to injury is to be given to individual concerned.
- 6) Compensation is to be sanctioned by the officer not below the rank of DCF/DFO.

Table No. 2.5.  
Table showing amount of compensation paid for  
attack on human being. (Amount in Rs.)

Year	No. of Death/PD	Amount	Nos. of injury	Amount	Total
2004-05	0	0	0	0	0
2005-06	2	400000	34	188671	588671
2006-07	1	200000	17	51575	251575
2007-08	0	0	6	30611	30611
2008-09	0	0	13	37000	37000
2009-10	2	400000	31	205182	605182
2010-11	1	200000	8	43231	243231
2011-12	0	0	13	195518	195518
2012-13	0	0	13	282360	282360
Total :	6	1200000	135	1034148	2234148

Table No. 2.6.  
Table showing no. of attack on Human being by Wild animals.

Species	Deaths	Major injury	Minor injury	Total
<b>Wild Boar</b>	<b>04</b>	<b>05</b>	<b>151</b>	<b>160</b>
<b>Fox</b>	<b>01</b>	<b>0</b>	<b>0</b>	<b>01</b>
<b>Wolf</b>	<b>01</b>	<b>0</b>	<b>0</b>	<b>01</b>
Total	06	05	151	162

#### COMPENSATION FOR CROP DAMAGE

Introduced vide GR No WLP/1008/C.No.-270/F-1 dated 02nd July 2010, it provides for compensating losses to the agricultural crops due to wild animals. A compensation of Minimum Rs.700/- per hectare is paid to the farmers subject to Maximum of Rs.18000/-.

Cases of crop damages and its extent is increasing day by day in the Division. It is because the predator species like Tiger has already vanished from the area and Leopards are on the verge of extinction. More peoples are coming forward to claim crop damages due to increase in awareness regarding the provisions of the compensation scheme of the Government.

Table No. 2.7.  
Table showing the crop damage cases and compensation paid. (Amount in Rs.)

Sr. No.	Year	Nos.	Amount
<b>1</b>	<b>2004-05</b>	-	-
<b>2</b>	<b>2005-06</b>	<b>214</b>	<b>218239</b>
<b>3</b>	<b>2006-07</b>	<b>260</b>	<b>321018</b>
<b>4</b>	<b>2007-08</b>	<b>272</b>	<b>443764</b>
<b>5</b>	<b>2008-09</b>	<b>531</b>	<b>354013</b>
<b>6</b>	<b>2009-10</b>	<b>95</b>	<b>64193</b>
<b>7</b>	<b>2010-11</b>	<b>1200</b>	<b>1302192</b>
<b>8</b>	<b>2011-12</b>	<b>715</b>	<b>2242370</b>
<b>9</b>	<b>2012-13</b>	<b>343</b>	<b>1166390</b>
<b>10</b>	<b>2013-14</b>	-	-
Total -		3630	6112179



CHAPTER II-C  
BIODIVERSITY

SECTION 1. GENERAL DISCRPTION OF BIODIVERSITY

2C.1.1. **Forests of this Division have a considerable large expanse. Therefore, they are fairly rich in biological diversity. This area is having potential of holding large number of flora and fauna. But that potential is deteriorating because of huge biotic pressure on the forests. With the current awareness and emphasis on biodiversity, it has become imperative to identify the flora and fauna of the area and due care needs to be taken to conserve it.**

Biogeographic location :

2C.1.2. **Biogeographically, the area of the division represents:**

- |                           |                          |
|---------------------------|--------------------------|
| a. Bio geographic kingdom | Paleotropical            |
| b. Sub kingdom            | Indomalaysian            |
| c. Biogeographic zone     | 6-Deccan peninsula       |
| d. Biotic province        | 6E-Central highlands     |
| e. Sub Division or Region | Satpuda Maikal Division. |

SECTION 2. FLORAL DIVERSITY:

2C.2.1. **No special survey is conducted to study the floral diversity of Amravati division. Many botanical surveys were carried out by different authorities, experts with various objects for Amravati District. Abstract of these botanical surveys and the reports/flora/thesis is given below. Since, the forest of Amravati division is located in 12 talukas out of 14 talukas in district, therefore the floras present the partial information about Amravati division.**

2C.2.2. **Past Work: The area of Amravati Division from Botanical Exploration point of view is almost virgin. Except for the Stewart and Brandis "Forest flora of North-West and Central India (1874). In 1887 Van Someron published "A list of Trees in the Melghat Forests" wherein he has given 110 trees species. Dickinson (1892) prepared a list of the Berar Circle of the Central Province. This was followed up in 1908 by Witt's "List of Trees, Shrubs and Climbers and Other Plants of Economic importance found in the Berar Forests Circle of the Central Provenances which includes Melghat tract. These lists were found to be of much use in the Central Provenance in absence of any flora for this region. Haine's "Descriptive list of Trees, Shrubs and Economic Herbs of Southern Circle" (C.P.) was published in 1916. This list proved to be most useful to the forest officers.**

2C.2.3. **Later on the listing of flora of Melghat Tiger Reserve was done by Dr.M.A.Dhore, Professor in V.M.V. College at Amravati and Mr.P.A.Joshi, Research Officer, Project Tiger Melghat which describe 648 naturalised species, belonging to 398 generas of 97 families. The flora describes 90 Trees species, 343 Herbs and 72 Climbers. 99 Shrubs and 84 Grass species. Out of these 28 species has been described for first time of Vidarbha region. This was published as the Technical Bulletin No.1 for Melghat Tiger Reserve.**

2C.2.4. **Further addition in this list was done and published vide Technical Bulletin-VII as "Additions to flora of Melghat Tiger Reserve" authored by Dr.Prabha Bhogonkar and V.D.Dewarkar, (1999) This re-exploration resulted in addition to 67 species to the earlier reports of Angiosperms. In all 10 generas 44 species, one subspecies, one variety and two variation (Total 48 Texa) are added to the list of dicots. Out of these 13 were first time reported for Maharashtra and 12 for Vidarbha region. For monocots, the addition was 8 genera and 19 species.**

2C.2.5. Later on 58 species were added to this by Dr.Aparna Watwe of Botanical Survey of India, W.R.S.Pune during 2004-05.

2C.2.6. In 2002 Mr.M.A.Dhore written a Ph.D. Thesis named as "Flora of Amravati District with special reference to the Distribution of Tree Species" which appears to be expansion of Technical Bulletin-I of Melghat Tiger Reserve.

The above works are tabulated as below:-

Table No.2.9  
Table showing the floral Biodiversity of the Amravati District.

Sr. No.	Name of Survey	Herbs	Shrubs	Climber	Grass	Tree	Total
01	Flora of Amravati District By.Dr.M.A.Dhore	572	210	89	123	90	1084
02	Additions to flora of Melghat by Dr.Prabha Bhogaonkar and Prof. V.D.Dewrkar	58	04	05	-	-	67
03	Survey by B.S.I. Pune by Miss.Aparna Watwe	49	06	2	-	01	58
	Total -	679	220	96	123	91	1209

Florestic Distribution :

2C.2.7. The floristic distribution changes along with the altitude from higher heights of Hattighat to plain of Paratwada and Amravati Ranges and to most of the Babul Bans which are along banks of nallas and rivers. These changes are conspicuous.

TREES -

2C.2.8. Teak (*Tectona grandis*) is the most dominant species. It surpasses all other component species in frequency and density. It is seen mixed in various proportions with other species,

2C.2.9. Enumeration data reveals ten major species of the region which are (1) Teak (*Tectona grandis*) (2) Bhera (*Chloroxylon sweitenia*), (3) Khair (*Acacia catechu*), (4) Palas (*Butea monosperma*), (5) Salai (*Boswellia serrata*), (6) Tendu (*Diospyros melanoxylon*), (7) Moyan (*Lannea coromendelica*), (8) Hiwar (*Acacia leucophloea*), (9) Apta (*Bauhinia recemosa*), (10) Char (*Buchanania lanzan*)

2C.2.10. Even most valuable species like Chandan (*Santalum album*) have its appearance in the area. It is because of the efforts by our predecessors of sowing of Chandan seeds in bushes in large areas but this species is again disappearing rapidly. Anjan (*Hardwickia binata*) is again another dominant species of this area, but it is lopped heavily for fodder. Even illicit cutting of Anjan is common for firewood. Therefore Anjan Forest has a rarely good appearance. Salai (*Boswellia serrata*) also have presence in large scale. But in the most of the area it is crooked or stunted. Most of Babul (*Acacia nilotica*) bans are situated in the scattered blocks in Division.

Bamboos :

2C.2.11. Bamboo (*Dendrocalanus strictus*) very rarely occur with in the territory of this Division. It occurs is Warud and Morshi Ranges.

#### Climbers :

2C.2.12. There are as many as 89 climbers/ twinners recorded in the district. *Mahulvel (Bauhinia vahlii)*, *Chilati (Acacia pinnata)*, and *Palasvel (Butea superba)* are the main woody climbers. *Malkanguni (Celastrus paniculata)*, *Gunj (Abrus precatorius)*, *Kach kuyari (Mucuna pruriens)*, *Gulvel (Tinospora cardifolia)*, are of medicinal importance. Moist places of the forest abounds in a variety of woody climbers.

2C.2.13. *Malkanguni* is now declared "Red Data" species as it on the verge of extinction from the Western Ghats.

#### Shurbs :

2C.2.14. There are 220 shrubs that exists in the area. *Raimunia (Lantana camara)*, *Bharati (Meytenius emarginata)*, *Nirgudi (Vitex negundo)*, *Tarota (Cassia tora)* *Parijatak/Karsadi (Nyctanthes arbortristis)* are the most common Shrubs.

#### Herbs :

2C.2.15. There are as many as 679 species of herbs recorded in the district. Most of the herbs have medicinal value. But herbs which have medical importance is on the verge of extinction because of uncontrolled and unscientific method of exploitation and tremendous biotic pressure and they are replaced by the obnoxious weeds like *Rantulsi (Hyptis suaveolens)*, *Gajar gavat (Parthenium hysterophorus)*, *Datura (Datura metals)* and *Mexican poppy (Argemone mexicana)*.

#### Grasses :

2C.2.16. There are few grass lands or fodder reserves in this Division. In most of the grassy blanks, soil depth is less. These are associated with brush wood or stunted tree growth. The most common grass species are *Kusali (Heteropogon contortis)*, *Pochati (Apluda mutica)*, *Gondel (Themade triandra)*, *Marvel (Dicanthian annulatum)* and *Bhurbhusi (Aristade depressa)* Most of the grassy lands are surrounded by thickly populated villages and few *Kathiawadis* also settled around these ramnas. Cattles of these villages and *Kathiawadis* graze in these fodder reserve. Due to heavy grazing pressure and recurrent fires the grasses from these areas are being replaced by the coarse unpalatable grasses and weeds species like *Rantulsi* and *Gajar gavat*.

#### Plant parasite:

2C.2.17. The flowering plant parasites occurring in the forests of this Division are *Bandgul (Cuscuta chinensis)* and *Amar vel (Cascuta reflexa)*.

#### Exotics :

2C.2.18 The exotic species found in this Division are *Eucalyptus hybrid*, *Eucalyptus camaldulensis*, *Grevillea robusta* etc.

### SECTION 3. FAUNAL DIVERSITY:

2C.3.1. Amravati district is also having fairly good faunal diversity. Zoological Surveys were carried out for Amravati Division by Zoology Department of the Sant Gadge Baba Amravati University mostly for Arachnids. Surveys were also conducted by Wildlife and Environment Conservation Society, Amravati but all these are limited works. The collective summary of these surveys is given below.

Class – PIECES

2C.3.2. **There are few water bodies in the Amravati Division. Some perennial streams and rivers retain water throughout the year. Earlier M.G.Gogte (1988) reported preliminary list of 19 fish species for Melghat.**

2C.3.3. **The list was further updated by Dr. D.R.Gujar (1993) and enlisted 24 fish species. Now after the survey by B.E.Yadav of Zoological Survey of India, W.R.S. Pune, the list has gone upto 96 species under 52 genera belonging to 19 families.**

Class – AMPHIBIA

2C.3.4. **Hill streams draining into major river of this division has ample water for the aquatic fauna as well as amphibians, which required water bodies for completing their life cycles. The forests have enough moisture during the winter months which is ideal for the survivals of the amphibians.**

2C.3.5. **There are 8 species of frogs and toads reported by Satish S. Kamble of Zoological Survey of India, W.R.S. Pune.**

Class – REPTILIA

2C.3.6. **The habitat of Amravati district is equally ideal for Reptiles also. However, tragically no consolidated account on the reptilian diversity from this region is available. From recent survey of Zoological Survey of India, Pune M.S. Pradhan reported 54 species of reptiles of which 36 species were collected or actually seen by the survey parties.**

List of Reptiles in Schedule I (Part II) of Wildlife Protection Act, 1972.

Sr.No	English Name	Scientific Name	Local Name
1	<b>Indian Rock Python</b>	<i>Python molurus</i>	vtxj

Class – AVES

2C.3.7. **Amravati District is rich in avian fauna. The vegetation of area is of Southern Tropical Dry Deciduous Forests. The most dominant element of this forest is Teak. The large area is Scrub forest and Pasture land. Climbers and herbaceous flora is also rich in some patches like Mahendri. This has supported the insect fauna of this reserve and in turn the avian community. The inventory of birds of the district is given by Wildlife and Environment Conservation Society, Amravati. Heading CHECK LIST OF BIRDS OF AMRAVATI DISTRICT which enlist 341 species. The list of birds found in the District is given in Appendix No.XLIII.**

2C.3.8. **List of important birds mentioned in various Schedules of Wildlife (Protection) Act 1972 which are found in Amravati District.**

List of Birds in Schedule I (Part III) found in Amravati Division.

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Red Headed Falcon</b>	<i>Falco chicquera</i>	Ykky MksD;kpk efyZu
2	<b>Peregrine Falcon</b>	<i>Falco peregrinus</i>	cghVh llk.kk
3	<b>Indian Peafowl</b>	<i>Pavo cristatus</i>	eksj
4	<b>Indian White backed vulture</b>	<i>Gyps beghalensis</i>	'kqHkzikBh fx/kkM
5	<b>Osprey or Fish eating eagle</b>	<i>Pseudo haliaetus</i>	eRI x:M

List of Birds Schedule II (Part II)

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Grey Jungle Fowl</b>	<i>Gallus sonneratii</i>	jk[kh jkudksacMk

Some birds recently Cited in the Amravati Division are as follows:-

Sr.No.	English Name	Scientific Name	Local Name
1	Forest spotted owlet	<i>Athene blewitti</i>	jkufiaXGk

Red Data Book Species:

Sr. No	English Name	Scientific Name	Local Name	Status
1	Ferruginous Pochard	<i>Aythya nyroca</i>	u;uljh	NT
2	Malabar Pied Hornbill	<i>Anthracoeros coronatus</i>	eyckjh iVVsjh /kus'k	NT
3	Forest Owlet	<i>Heteroglaux blewitti</i>	jku fiaXGk	CR
4	Black-tailed Godwit	<i>Limosa limosa</i>	dkG;k 'ksiVhpk ekyxqyk	NT
5	Sociable Lapwing	<i>Vanellus gergarius</i>	la?kpkjh fVVoh	VU
6	Indian Skimmer	<i>Rynchops albicollis</i>	---	VU
7	Egyptian Vulture	<i>Neophron percnopterus</i>	bftl'kh;u fx/kkM	EN
8	Red-headed Vulture	<i>Sarcogyps calvus</i>	jkt fx/kkM	CR
9	White-rumped Vulture	<i>Gyps bengalensis</i>	ika<&;k iqBB;kps fx/kkM	CR
10	Indian Vulture (longbilled)	<i>Gyps indicus</i>	Hkkjrh; fx/kkM	CR
11	Pallas's Fish Eagle	<i>Haliaeetus leucorhynchus</i>	iYyklpk eRL; x#M	VU
12	Pallid Harrier	<i>Circus macrourus</i>	ika<qjdk gkfj.k	NT
13	Lesser Kestrel	<i>Falco naumanni</i>	yghu [k#ph	VU
14	Laggar Falcon	<i>Falco lagger</i>	yXxM llkuk	NT
15	Darter	<i>Anhinga melanogaster</i>	frjankt	NT
16	Lesser Flamingo	<i>Phoenicopterus minor</i>	NksVk jksfgr	NT
17	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	dkG;k MksD;kpk 'kjkVh	NT
18	Painted Stork	<i>Myeteria leucocephala</i>	jaxhr djdkspk	NT
19	Black and Orange Flycatcher	<i>Ficedula nigrorufa</i>	dkGk ukfjaxh ek'khekj	NT
20	Green Avadavat (Munia)	<i>Amandava formosa</i>	fgjok eqfu;k	VU

CR-Critically Endangered, VU-Vulnerable,

NT-Near Threatened

Class – MAMMALIA

2C.3.9. These is the most important class of vertebrates. Which consists of very important species of primates and carnivore from the various surveys carried out in Amravati District. i.e. 1. By M.S. Pradhan of Zoological Survey of India, WRS Pune and 2. Nature Conservation Society, Amravati 3. Wildlife and Environment has reported 80 species of Mammals in Amrvati District list of Mammals is given in Appendix No.XLIII. Census data furnished to this office by the division does not show the presence of Tiger and Leopard in the Division. But other survey shows the presence of the Tiger in Warud Range. Even a Tigress found dead in Warud Range in March 2013. Spill over population of Tiger from Melghat Tiger Reserve and Pench Tiger Reserve many times resides this area.

2C.3.10. List of mammals found in Amravati District which are mentioned in various Schedules of Wildlife (Protection) Act 1972 and Red Data Lists are given below :-

Schedule I Part I

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Tiger</b>	<i>Panthera tigris</i>	ok?k
2	<b>Leopard/Panther</b>	<i>Panthera pardus</i>	fccV;k
3	<b>Sloth bear</b>	<i>Melursus ursinus</i>	vLoy
4	<b>Gaur/Indian bison</b>	<i>Bos gaurus</i>	jkuxok
5	<b>Indian wolf</b>	<i>Canis lupus</i>	ykaMxk
6	<b>Black buck</b>	<i>Antelope cervicapra</i>	dkGohV
7	<b>Four horned antelope</b>	<i>Tetraceros quadricornis</i>	pkSflaxk
8	<b>Indian pangolin</b>	<i>Manis crassicaudata</i>	[koY;k ekatj
9	<b>Ratel/Honey badger</b>	<i>Mellivora capensis</i>	pkanh vLoy
10	<b>Mouse deer</b>	<i>Moschiola meminna</i>	filksjh gfj.k
11	<b>Leopard cat</b>	<i>Felis bengalensis</i>	ok?kkVh

Schedule II (Part I)

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Common langur</b>	<i>Presbytis entellus</i>	okuj
2	<b>Rhesus macaque</b>	<i>Macaca mulatta</i>	yky rksaMkps ekdM
3	<b>Wild dog/Dhole</b>	<i>Cuon alpinus</i>	jkudq=k@<ksy

Schedule II (Part II)

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Common palm civet or Toddy cat</b>	<i>Paradoxus hermaphroditus</i>	mn~ekatj
2	<b>Small Indian Civet</b>	<i>Viverricula indica</i>	toknh ekatj
3	<b>Flying Squirrel</b>	<i>Rutufa indica</i>	mM.kkjh [kkj
4	<b>Jackal</b>	<i>Canis aureus</i>	dksYgk
5	<b>Indian grey mongoose</b>	<i>Herpestes edwardsii</i>	eaqxwl
6	<b>Indian ruddy mongoose</b>	<i>Herpestes smithii</i>	eaqxwl
7	<b>Jungle cat</b>	<i>Felis chaus</i>	jkuekatj
8	<b>Otter</b>	<i>Lutragale perspicillata</i>	ikuekatj

Schedule III

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Barking deer</b>	<i>Muntiacus muntjak</i>	Hksdj
2	<b>Chital</b>	<i>Axis axis</i>	fprG
3	<b>Hyaena</b>	<i>Hyaena hyaena</i>	rMI
4	<b>Nilgai/Bluebull</b>	<i>Boselaphus tragocamelus</i>	jksgH
5	<b>Sambar</b>	<i>Cervicarpus unicolor</i>	lkacj
6	<b>Wild pig</b>	<i>Sus scrofa</i>	jkuMqDdj

Schedule IV

Sr.No.	English Name	Scientific Name	Local Name
1	<b>Black Napped Hare</b>	<i>Lepus nigricollis</i>	llk
2	<b>Five Stripped Palm Squirrel</b>	<i>Funambulus pennatii</i>	[kkj
3	<b>Indian porcupine</b>	<i>Hystrix indica</i>	lkGhanj

Red Data Species of class Mammalia

1	Tiger	<i>Panthera tigris</i>	Endangered
2	Black buck	<i>Antelope cervicapra</i>	Vulnerable
3	Dhole	<i>Cuon alpinus</i>	Vulnerable
4	Sloth Bear	<i>Melursus ursinus</i>	Vulnerable

Above description shows Amravati Division is unique in biodiversity. And it is need of the time to conserve it for posterity. Even the data of human being killed by wild animals reveals the presence of Wolf in the division. This needs to be checked by the higher authorities of the Division.

SECTION 4. : THE BIOLOGICAL DIVERSITY ACT, 2002

2C.4.1. The Biological Diversity Act, 2002 came into existence from February 2003. The Act provides for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources.

2C.4.2 Some of the important sections of the Act are reproduced for ready reference.

Definition:

Sec 2(b) Biological diversity : Means the variability among living organisms from all sources and the ecological complexes of which they are part, and includes diversity within species or between species and ecosystem.

Sec 2(c) Biological resources : Means plant, and animal and micro-organism or parts thereof, their genetic material and by products (excluding value added products) with actual or potential use or value, but does not include human genetic product.

Sec 2(h) Local bodies : Means Panchayats and Municipalities, by whatever name called within the meaning of clause (i) of article 243 B and clause (i) of article 243 Q of constitution and in the absence of any Panchayats or Municipalities, institutions of self government constituted under any other provisions of the constitution or any Central Act or State Act.

Sec 2(o) Sustainable use : Means the use of components of biological diversity in such manner and at such rate that does not lead to the long term decline of the biological diversity there by maintaining its potential to meet the needs and aspirations of present and future generations.

Regulations to Access to Biodiversity.

Sec 3. (1) No person referred to in sub-section (2) shall, without previous approval of the National Biodiversity Authority, obtain any biological resource occurring in India or knowledge associated thereto for research or for commercial utilization or for bio-survey and bio-utilization.

(2) The persons who shall be required to take the approval of the National Biodiversity Authority under sub-section (1) are the following, namely:

- (a) a person who is not a citizen of India;
- (b) a citizen of India, who is a non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961;
- (c) a body corporate, association or organization-
  - (i) not incorporated or registered in India; or
  - (ii) incorporated or registered in India under any law for the time being in force which has any non-Indian participation in its share capital or management.

Results of research not to be transferred to certain persons without approval of National Biodiversity Authority

Sec 4. **No person shall, without the previous approval of the National Biodiversity Authority, transfer the results of any research relating to any biological resources occurring in, or obtained from, India for monetary consideration or otherwise to any person who is not a citizen of India or citizen of India who is non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961 or a body corporate or organization which is not registered or incorporated in India or which has any non-Indian participation in its share capital or management.**

**Explanation.-** For the purposes of this section, "transfer" does not include publication of research papers or dissemination of knowledge in any seminar or workshop, if such publication is as per the guidelines issued by the Central Government.

Sections 3 and 4 not to apply to certain collaborative research projects

Sec 5.(1) **The provisions of sections 3 and 4 shall not apply to collaborative research projects involving transfer or exchange of biological resources or information relating thereto between institutions, including Government sponsored Institutions of India, and such Institutions in other countries, if such collaborative research projects satisfy the conditions specified in sub-section (3).**

(2) **All collaborative research projects, other than those referred to in sub-section (1) which are based on agreements concluded before the commencement of this Act and in force shall, to the extent the provisions of agreement are inconsistent with the provisions of this Act or any guidelines issued under clause (a) of sub-section (3), be void.**

(3) **For the purposes of sub-section (1), collaborative research projects shall-**  
(a) **conform to the policy guidelines issued by the Central Government in this behalf;**  
(b) **be approved by the Central Government.**

Application for intellectual property rights not to be made without approval of National Biodiversity Authority

Sec 6.(1) **No person shall apply for any intellectual property right, by whatever name called, in or outside India for any invention based on any research or information on a biological resource obtained from India without obtaining the previous approval of the National Biodiversity Authority before making such application.**

**Provided that if a person applies for a patent, permission of the National Biodiversity Authority may be obtained after the acceptance of the patent but before the seeking of title patent by the patent authority concerned:**

**Provided further that the National Biodiversity Authority shall dispose of the application for permission made to it within a period of ninety days from the date of receipt thereof.**

(2) **The National Biodiversity Authority may, while granting the approval under this section, impose benefit sharing fee or royalty or both or impose conditions including the sharing of financial benefits arising out of the commercial utilization of such rights.**

(3) **The provisions of this section shall not apply to any person making an application for any right under any law relating to protection of plant varieties enacted by Parliament.**

(4) **Where any right is granted under law referred to in sub-section (3), the concerned authority granting such right shall endorse a copy of such document granting the right to the National Biodiversity Authority.**

Prior intimation to State Biodiversity Board for obtaining biological resource for certain purposes

**Sec 7. No person, who is a citizen of India or a body corporate, association or organization which is registered in India, shall obtain any biological resource for commercial utilization, or bio-survey and bio-utilization for commercial utilization except after giving prior intimation to the State Biodiversity Board concerned:**

**Provided that the provisions of this section shall not apply to the local people and communities of the area, including growers and cultivators of biodiversity, and *vaid*s and *hakims*, who have been practicing indigenous medicine.**

Biodiversity heritage sites

**Sec37. (1) Without prejudice to any other law for the time being in force, the State Government may, from time to time in consultation with the local bodies, notify in the Official Gazette, areas of biodiversity importance as biodiversity heritage sites under this Act.**

**(2) The State Government, in consultation with the Central Government, may frame rules for the management and conservation of all the heritage sites.**

**(3) The State Government shall frame schemes for compensating or rehabilitating any person or section of people economically affected by such notification.**

Constitution of Biodiversity Management Committee

**Sec 41(1) Gives the power of constitution of Biodiversity Management Committee. Every local body shall constitute a Biodiversity Management Committee within its area for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land resources, field varieties and cultivators domesticated stock and breeds of animals and micro-organisms and chronicle of knowledge relating to biological diversity.**

**Sec 41(2) The National Biodiversity Authority and the State Biodiversity Boards shall consult the Biodiversity Management Committee while taking any decision relating to the use of biological resources and knowledge associated with such resources occurring within the territorial jurisdiction of the Biodiversity Management Committee.**

**Sec 41(3) The Biodiversity Management Committee may levy charges by way of collection fees from any person for accessing or collecting any biological resource for commercial purpose from areas within its territorial jurisdiction.**



CHAPTER III  
UTILIZATION OF THE FOREST PRODUCE

SECTION 3.1 AGRICULTURAL CUSTOMS AND WANTS OF PEOPLE

3.1.1 The area and population of Amravati Forest Division according to latest figures available are as follows

Table No. 3.1

Area in sq. kms	Population (2011)	Population density sq/km	Forest in sq. km	Per capital Forest area in ha
<b>12,210</b>	<b>28,88,445</b>	<b>237</b>	<b>520.07</b>	<b>0.052</b>

The rural population as per 2011 census was 64.09%. The main business in the rural area of the division is agricultural farming, horticulture and farm labour. Villagers residing in and around forest depend on forests mainly for their daily bonafide needs such as small timber, fuel wood and fodder etc. In horticulture mainly Orange orchards are established in Warud, Morshi, Chandur Bazar and Achalpur taluka. These orchards need bamboos, ballies for support to orange trees. Large numbers of labourers are engaged in these orchards for various works. The other main agriculture crops are Cotton, Soyabean, Jawar, Wheat, Gram, Tur and pulses like Mung, Urad etc. During non agriculture season villagers adjoining to the area are engaged in collection of tendu leaves in tendu season and minor forest produce collection such as Mahua, Charoli, Sitaphal, Honey, Biba, Gum, Sindi Fruits and leaves.

Table 3.2  
Taluka wise cattle population census Year 2010.

Sr. No.	Name of Taluka in Amravati Forest Division	Cow	Buffaloes	Sheep	Goat
1	Amravati	9539	9539	25237	26307
2	Tiwsa	9252	3809	1330	19338
3	Chandur Railway	9001	2289	3022	15022
4	Chandur bazar	11250	4771	2178	27081
5	Nandgaon Khandeswar	11993	3888	2028	23244
6	Bhatkuli	7968	2395	04	14260
7	Achalpur	10748	6012	4247	26998
8	Daryapur	10058	2589	03	27628
9	Morshi,	11877	4292	6255	25311
10	Warud,	13731	4064	963	16122
11	Anjangaon	8582	3210	4252	18687
12	Dhamangaon	11043	3610	-	-
	Total	125042	50468	49519	239998

SECTION 2. MARKETS AND MARKETABLE FOREST PRODUCE

3.2.1 Amravati, Paratwada, Warud, Morshi, Chandur bazar, Chandur (Rly), Dhamangaon, Daryapur, Morshi, Badnera are the main market place in Amravati Division.

3.2.2 Teak is the most valuable species its timber is used for furniture, building etc.

3.2.2.1 TIMBER: Timber depot at Paratwada under the jurisdiction of East Melghat Forest Division is main timber outlet in the district. There is mini depot in Amravati Division at Pusla. Due to the shortage of availability and high cost of Teak other timber species like Haldu, Saja, Tiwas, Babul, and Neem etc. are also used.

3.2.2.2 FUEL: The demand for fire wood in the village is very large and Babul, Dhawada, Lendia etc. along with agriculture waste is also used as fuel wood.

3.2.2.3 BAMBOO: The farmers particularly orange growers need bamboos on large scale. Bamboo is required for manufacturing of baskets and construction of hut and sheds. The entire above requirement is fulfilled by importing bamboos from Madhya Pradesh and adjoining forest divisions of Maharashtra.

3.2.2.4 GRASSES: Grasses mainly serves as fodder, some varieties are used for thatching roofs of huts and cattle's sheds major part of the available grass in this tract is from the Wadali Range from existing Ramnas.

3.2.2.5 GRAZING: The demand for grazing is abnormally high in this Division, Cattle are permitted to forest grazing at the concession and commercial rates. Day by day grazing pressures is increasing on forest land due to herds of cattle and goats/sheep's reared by local villagers, Kathiyawadis.

3.2.2.6 OTHER N.T.F.P.: Tendu leaves, Charoli, Mahua Flower and Fruits, Gum, Honey and Sitaphal are other non-timber forest produce which are obtained in small quantities.

### SECTION 3. LINES OF EXPORT

3.3.1 Railway: Following railway tracts passes through the area of division.

Mumbai	-	Kolkata
Badnera	-	Amravati
Murtizapur	-	Achalpur
Amravati	-	Narkhed

3.3.2 Roads: - There is good network of road in this Division almost every village is connected with taluka head quarter and every taluka head quarter with Amravati as district head quarter. List of major roads is given below:-

- 1) Mumbai-Kolkata National Highway No.6. passes through district.
- 2) Amravati -Dhamangaon towards Pulgaon in Wardha district.
- 3) Amravati-Dharni - to Burhanpur in Madhya Pradesh.
- 4) Amravati-Warud- to Pandhurna in Madhya Pradesh
- 5) Amravati-Morshi- to Multai in Madhya Pradesh
- 6) Amravati-Daryapur- to Akot in Akola district.
- 7) Amravati-Paratwada- to Baitul in Madhya Pradesh.
- 8) Amravati-Nandgaon Kh. - to Yavatmal.
- 9) Amravati-Mardi-Kurha
- 10) Amravati-Paratwada-Anjangaon Surji
- 11) Amravati-Bhatkuli
- 12) Amravati-Tiwsa-Chandur Railway
- 13) Paratwada-Chandur Bazar-Morshi
- 14) Paratwada-Akot

Besides above there are other district road and forest roads. Roads in rural area which are handed over to Zilla Parishad are maintained by them, while Highways are maintained by PWD and NHAI.

### SECTION 4. METHOD OF HARVESTING AND THEIR COST

3.4.1 Timber and firewood are the major forest produce which are exploited departmentally or through FLCS as per Government policy and GR no 1581/93544/ F-4 dated 4/4/1981.

**3.4.2 Harvesting of Minor Forest Produce/NTFP is carried out by the JFMCs in the forest areas assigned to it and in remaining forest areas it is done departmentally as per the Govt. instruction and resolution issued from time to time. Tendu leaves are harvested by licensees as per modified lump-sum system with ceiling of upper limit. As per Govt. G.R. No. MFP-2104/CR-67/F-1 dated 28/02/2006 the royalty received after deducting the expenditure on collection of Tendu leaves from 2006 season is being distributed as bonus to the Tendu leaves collectors.**

#### SECTION 5. TIMBER DEPOTS

**3.5.1 List of Timber Depot is given in Appendix No.XIX C**

**3.5.2 There are 136 privately owned saw mills in the Division. Out of these 63 saw mills are located in Amravati city, thereby developing a timber zone, similarly 73 saw mills are located at Chandur Rly. Paratwada and Warud respectively. Details of saw mill are at Appendix No.XXI.**

#### SECTION 6. COST OF HARVESTING

**3.6.1. The wage board sanctioned rates for harvesting for the year 2013-14 is at Appendix No.XXII.**

#### SECTION 7. PAST AND CURRENT PRICES

**3.7.1 A statement showing market rate of Teak at depots is at Appendix No. XXIII.**



CHAPTER-IV

STAFF AND LABOUR SUPPLY

SECTION : 1 : - STAFF :

4.1.1. The tract dealt with is under the administrative control of Deputy Conservator of Forests, Amravati Forest Division, Amravati in Amravati Forest Conservancy. The Head Quarter of this division is at Amravati. List of officers who held charge of Amravati Division & Statement showing position of staff in Amravati division is given in Appendix No.XXVI and XXVIIa.

Sr. no.	Designation	No. of posts				
		Sanctioned	Permanent	Temporary	Filled	Vacant
Class I-						
1	Deputy Conservator of Forests	1	0	1	1	0
2	Assistant Conservator of Forests	3	1	2	3	0
Class I-total		4	1	3	4	0
Class II-						
3	Range Forest Officer	9	6	3	9	0
Class II-total		9	6	3	9	0
Class III						
4	Forester	33	27	6	33	0
5	Forest Guard	134	110	24	134	0
6	Chief Accountant	1	0	1	1	0
7	Accountant	7	6	1	7	0
8	Clerk	14	10	4	12	2
9	Surveyor	2	2	0	2	0
10	Driver	10	9	1	10	0
11	Police Constable	1	1	0	0	1
Class III total		202	165	37	199	3
Class IV -						
12	Naik	1	0	1	1	0
13	Peon	4	4	0	3	1
14	Daftari	1	0	1	1	0
15	Watchman	1	1	0	1	0
16	Mali	4	3	1	2	2
17	Van mazoor	209	209	0	209	0
Class IV -total		220	217	3	217	3
Total staff		432	382	40	416	6

4.1.2. Accommodation : **Accommodation made available is inadequate. Majority of the staff members are not provided with accommodation. List of buildings is at Appendix No.XXVIII.**

4.1.3. Rest House: **There are FRH at Amravati, Mahendri and Inspection Hut is at Morshi and Paratwada.**

4.1.4. Forest Communications: **All the range headquarters are well connected to the division by state highways. Round and Beat head quarters are also well connected. All ranges are provided with telephones. Total 60 Forest Guards in the division have been provided with PDA Smart Phones and a 3G BSNL Sim Card, which enable them to fill up the information of forest offences instantly so as to create a data base of the department. These PDAs will be used for different applications related to forestry works as and when made available by National Informatics Centre, Nagpur to the Forest department.**

4.1.5. Office Automation: **The division office, ranges and depot offices are equipped with computers and other related hardware, software and internet facilities. Officers and staff members are using these computers and other gadgets. Maharashtra Forest Department is following IT developments.**

SECTION : 2 : - LABOUR SUPPLY:

4.2.1. **In the past villages inside forest where having the status of forest villages, thereby officers of the department were utilizing the powers of Revenue officers. Due to this status laborers for forestry works were easily available from the forest villages. Now these villages are converted in to revenue villages. Due to development works, education and awareness the situation has drastically changed, thereby the tendency of the laborers for forestry works is declined. Secondly due to large nos. of orange orchards and other agricultural works laborers are getting attractive wages. Therefore forest staff is facing difficulty in getting laborers for forestry works. Statement showing wage board rates of 2013-14 for different forestry operations is at Appendix No.XXII.**



## CHAPTER-V

### PAST SYSTEM OF MANAGEMENT

#### SECTION- 5.1 : - GENERAL HISTORY OF THE FORESTS :

5.1.1.1. Berar was assigned to the British Raj in 1853, and in 1865 the Forest Department started functioning by the appointment of an Assistant Conservator who worked under the guidance of the Conservator of Forests, Central Provinces. At this time, the forests of Amravati district continued to be managed by the Deputy Commissioner. In 1867-68, a daroga (Forest Ranger) was appointed in charge of the Amravati district forests under the control of the Deputy Commissioner. In 1869-70, two forest divisions were formed in Berar namely the northern and southern division. But the forests of Amravati district were still managed by the Deputy Commissioner and were not included in these divisions. In 1871, the forests of this division were reclassified, but the management by the Deputy Commissioner continued under the settlement rules and district forest rules. In 1883, the Amravati forest division was formed and all the forests of the district were placed under the control of a Divisional Forest Officer, who was subordinate to the Deputy Commissioner, as his Assistant in all Forest matters and Deputy Commissioner with the Conservator of Forests. In 1901, D.F.O. Amravati was directly placed under the Conservator of Forests. The old Amravati division was divided into three administrative units namely (a) East Melghat, (b) West Melghat and (c) Amravati Sub-Division by the order of Government of Maharashtra, Agriculture Food and Forest Departments Resolution No. FDM\_ 1361/ 12464-111-J, dated 6<sup>th</sup> February 1964. The situation continued till 1983, when Amravati Sub-Division was raised to a status of a Division by the Government notification no. FDM/1880/1-F2 dated 29<sup>th</sup> of August, 1983.

5.1.1.2. In the year 1881, a classification of forests was introduced in Berar and following classes were distinguished:-

- (i) Reserves :- **Fairly large areas intended for the production of wood.**
- (ii) Woods (Bans) :- **Areas too small to be formed into reserves, but suitable for the growth of trees, chiefly babul forests.**
- (iii) Grass lands (Ramnas):- **Areas set aside for the production of fodder and thatching grass.**
- (iv) Grazing lands : - **Areas permanently required for grazing.**
- (v) Open forests (Parit) :- **Unoccupied assessed survey numbers.**

Under this classification the Sekdari, Mahendri, Lakhara, Hattighat, Wishroli and Chirodi Reserves come under category (i); the babul bans under (ii); and the present grass ramnas under category (iii); while categories (iv) and (v) refers to the present 'C' class and 'E' class forests. The last one is now manage by Revenue department.

5.1.1.3. The Berar Forest Law was passed in 1886, and it was implemented in 1892 due to the delay in framing rules under it. In 1911, the Indian Forest Act VII of 1878 was extended to Berar.

#### SECTION:5.2: PAST SYSTEMS OF MANAGEMENT AND THEIR RESULTS :

5.2.1.1. First working plan of the division:- . In 1902, a working Plan for the forests of Amravati Division was drawn up by Shri E. E. Fernandez, Conservator of Forests, Hyderabad Assigned Districts. It laid down prescriptions for the period from 1902-1903 to 1926-1927. Under this plan 4149 acres of Babul bans were proposed to be planted under agri-silviculture. The method of treatment prescribed consisted of clear felling followed by "Sowing in plough made furrows 6' apart or patches of 3'x5', 6' apart either way on the square or in notches similarly distanced." Control forms showing the results of the working in the circle were not maintained. Chirodi reserve was allotted to the Bushwood working circle and simple coppice treatment was prescribed with a rotation of 15 years. Two felling series, Warur (4368acres) and Brahmi (5463acres) were laid out in this working circle. Simple coppice system did not give satisfactory results, so the areas after clear felling were planted under agri-silviculture.

The first eleven coupes of Warur felling series and eight coupes of Brahmi felling series were planted under agri-silviculture during the period 1904 to 1922. The species sown were Khair (*Acacia catechu*), Bor (*Zizyphus jujuba*), Bhosa (*Bahunia racemosa*), Goti (*Zizyphus xylopyra*), Bharati (*Gymnosporia montana*), Neem (*Azadirachta indica*), Saja (*Terminalia tomentosa*), Salai (*Boswellia serrata*), Achar (*Buchanania latifolia*), Anjan (*Hardwickia binata*), Babul (*Acacia nilotica*) and Palas (*Butea monosperma*).

5.2.1.2. No work was done in Chirodi reserve after 1926, when the last plot leased out for agri-silviculture was released.

5.2.1.3. Shekdari, Mahendri and Lakhara reserves of Morshi range constituted Teak Working Circle under that plan. Each of the three reserves was divided into two felling series, each felling series comprising of ten coupes. The method of treatment prescribed was coppice improvement felling on a rotation of 20 years. The working plan for this area was never sanctioned by the government and the areas were worked under the working schemes annually sanctioned by the Conservator of Forests.

5.2.1.4. In 1919, Shri H.S. George prepared a working scheme for the babul bans. This scheme proposed to plant up 1528.098 hectare under agri-silviculture and 14 coupes to be worked from 1919-20 to 1933-34 were laid out. It met with variable success. The work was abandoned in 1937 when there was a slump in cotton prices and lease money offered for agri-silvicultural work was low.

5.2.1.5. In 1930 a revised provisional working scheme for the Shekdari, Mahendri and Lakhara reserves was prepared by Sardar Sahib Kesar Singh, Extra-Assistant Conservator of Forests and was introduced in 1930-31. Under that scheme, each of the six felling series formed as per Shri Ferdinadez's plan, was divided into 20 annual coupes. It prescribed "Very light improvement fellings" for the two felling series of Lakhara reserve, "Light improvement felling" for the two felling series of Mahendari reserve and "Ordinary improvement felling" for the two felling series of Shekdari reserve. This working scheme was a failure.

5.2.1.6. From 1935, Shekdari, Mahendri and Lakhara reserves were being worked under the working plan drawn up by Shri Gurudayal Singh. For the "A" class reserves, Babul bans and grass reserves of Amravati, Morshi and Chikhaldha (now Paratwada range) ranges and Chirodi reserve of the Amravati range, the working plan prepared by Shri W.N. Sharma, came in force from 1941. These two plans were combined into one plan by Shri Upadhyay.

5.2.1.7. The treatment prescribed and the results of the working carried under the two plans mentioned above were as follows:-

5.2.2.1. Working plan for the "A" class:- Babul Bans and "A" class Grass Reserves of Amravati, Morshi and Chikhaldha ranges and Chirodi reserve of Amravati Range.

The following working circles were formed:-

(i)	The Babul Ban plantation working circle	-	5873 acres, 22 guntha
(ii)	The Chirodi plantation working circle	-	5773 acres
(iii)	The Miscellaneous working circle	-	21710 acres

5.2.2.2. The babul ban plantation working circle:- Under this working circle seven felling series were formed and a rotation of 30 years was fixed. The treatment prescribed was clear felling followed by regeneration by agri-silviculture. The forest species were to be sown in lines 18 feet apart in the third year after raising of pure agricultural crops during the first two years. Early thinning in congested rows of forest species in fifth year, tenth year and twentieth years were prescribed. In areas with heavy weed growth uprooting of the weeds was prescribed. Up to end of 1959-60, coupes I to XX were felled and coupes I to XVIII were regenerated by agri-silviculture. Parts of some coupes were written off as the areas were unsuitable for agri-silviculture while in two felling series (Morshi and Ner) some coupes remained in arrears.

5.2.2.3. In this Working Circle only such areas as were fit for cultivation and for which there was a definite demand for agri-silviculture were included. Out of 7 felling series one viz. Yaoli felling series in Amravati range was provisional. As throughout the period of this plan, the demand for land for cultivation remained fairly keen, even the provisional felling series were regularly worked. Some Survey Numbers adjoining the babul bans were left out of the working circle for the reason that they carried a somewhat poorer soil unfit for cultivation, (e.g. Morshi survey No.142). As the method of regeneration was by agri-silviculture, the demand for land had to determine the progress of regeneration, but if the raising of forest crop were to be recognized as the primary object of management (and not the provision for cultivation) it was not necessary to exclude the unsuitable areas from working. The prescriptions did include the planting of poorer soils with suitable species other than babul which it exacting in its soil requirements, and so the areas with poorer soil should not have been excluded. In some cases, it was found that some areas unsuitable for cultivation were included in the working circle but these remained unregenerated, e.g. Tondgaon Survey No.2 (c/VIII Sirasgaon felling series).

However, such areas are very few and generally speaking the results of working in this working circle are quite successful. The prescription regarding planting of non-babul species like *Prosopis juliflora*, *Acacia catechu*, *Soymida fabrifuga* etc. on poorer soils and of *Bamboos* and *Albizzia lebbek* on nala banks did not receive adequate attention and it has resulted in small gaps or blanks in the babul crop.

5.2.2.4. Successful working in this working circle hinged around the demand for land for cultivation as also on the efficiency of supervision of Contractors work. wherever the land hunger decreased, there was a tendency on the part of the Contractor to neglect the resowing, the tending of the forest species and the regeneration suffered.

5.2.2.5. The Chirodi plantation working circle:- Under this working circle, only one felling series was formed. Clear felling and planting by agri-silviculture were prescribed. After clear felling the annual coupe was to be divided into plots and each plot was to be leased out for raising pure agricultural crop during the first two year and planting suitable tree species in the third year in lines 15 feet apart. Selection weedings and thinnings in lines were to be carried out during the first four years after planting.

5.2.2.6. In the first two coupes, teak was planted over small areas. It established well and rapidly spreading in the adjoining, open mixed forests. After treating the first two coupes under the prescribed rules, Coupe III was worked through a Contractor and was taken up for raising experimental plantations. These were to be raised in 5 years taking 5 acres of area each year. Coupe IV was clear felled and left to be filled up by coppice reproduction. After working Coupe No. IV the prescriptions of paragraphs 82, 83 and 85 of the plan were suspended and the coupes were ordered to be worked under improvement fellings vide Chief Conservator of Forests, C.P. and Berar's No. 3008, dated 26<sup>th</sup> July 1944. Since then these areas have been worked under improvement fellings. Attempts to raise Teak plantations over small area have been made in coupe Nos. XIII, XVIII and XXII but without much success as the site conditions were not suitable. The Teak plantation in suitable areas however is quite well. The Working Plan prescriptions did not provide a definite thinning schedule and the young teak plantation in coupes I and II, raised during the period of this plan were congested and were in need of opening out immediately. The total areas worked and areas planted in this working circle up to the end of 1959-60 are 3116 and 554 acres, respectively.

5.2.2.7. The Miscellaneous working circle:- This included all babul bans which were considered to be unsuitable for agri-silvicultural operations, all grass reserves, the poorer areas of Chirodi reserve, and all forest villages. No specific operations for this working circle were prescribed. All the grass reserves were closed to grazing and strictly fire protected. In the absence of direct measures for improvement there has been no improvement in the quality and yield of fodder from the grass reserves.

5.2.2.8. For the "C" class forests, no specific operations were prescribed. It was recommended that experimental rotational closures to grazing and experimental afforestation by agri-silviculture be carried out in suitable areas. Some areas were afforested under agri-silvi in Wadhona "C" class forests in Amravati Range. In Morshi range, three plots were fenced and planted with paonia and other superior fodder grasses.

5.2.3.1. Working plan for Shekdari, Mehedari and Lakhara Reserves of the Morshi Range:-

The following working circles were formed:-

(i) The Coppice Working Circle Area	-	15560 acres
(ii) The Miscellaneous Working Circle Area	-	1714 acres
(iii) The Bamboo (overlapping) Working Circle Area	-	7861 acres

5.2.3.2. The Coppice Working Circle:- Four felling series were formed out of three reserves viz. the Shekdari, Mehedari and Lakhara. The 30 years rotation was fixed. The forests allotted to this Working Circle were to be worked under 'Coppice with Reserves' system. Under this system, clear-felling was to be restricted to areas, which could yield sufficient coppice growth to restock the areas adequately, and in the remaining areas, improvement fellings were to be carried out. The prescriptions were simple but some-what primitive. They were amended and elaborated vide amendment No. 10, dated 15<sup>th</sup> April 1941. After the main fellings, subsidiary cultural operations and cutting of climbers were prescribed. As per these prescriptions coupe Nos. I to XXVI were worked by the end of 1959-60.

5.2.3.3. The treatment actually given to the crop did not produce the conventional coppice crop, for the reasons that the completely clear felled patches were few and small in extent or because the initial stocking was not full or due to apprehension that clear felling may result in pure crops. In the earlier coupes, where concentrated regeneration felling were carried out over larger areas, the results were excellent, but in the later years the reservation had been somewhat heavier. However, the progress of reproduction of teak is found satisfactory. As preference had been given to teak in almost all tending operations, teak becoming pure and had extended over considerable areas in the mixed forest patches and also in the open areas. Coupes from I to XXVI have been worked up to end of 1959-60.

5.2.3.4. It was mentioned in para 97 of the W.N.Sharma's Working Plan that extensive tending operations were not important in these low quality areas and thinning in the 16<sup>th</sup> year suggested. However, in the young teak crops of almost all worked coupes, some sort of cleaning operations were carried out and coupes IX to XVI were thinned in the 20<sup>th</sup> year. The young crops have benefited by these operations, but these were done on very conservative lines and congestion is still noticed in the existing crop.

5.2.3.5. The Miscellaneous Working Circle:- Besides the forest villages, only one compartment having forest growth was allotted to this working circle. No operation was prescribed or carried out in this working circle.

5.2.3.6. The Bamboo (overlapping) Working Circle:- Only two felling series viz. the Bhemdi and the Mehedari were formed. They were worked on a 4 year felling cycle. The rule for working of bamboo coupes were inadequate to achieve improvement of the bamboo forests. Since the demand for bamboos in the tract was very heavy over exploitation was noticed and working of bamboos was later on stopped. This resulted in congestion in some of the clumps.

5.2.4.1. Working Plan by Shri B.H.Upadhyay was introduced in 1961-62. It expired in 1976-77. However due to non-revision of the plan, it remained operative till 87-88. No further extension was granted to the plan in view of directive of the government not to work a forest till the working plan is revised. There were six working circles. A summary of treatments prescribed and the results of working are summarized as under.

5.2.4.2. Coppice with the Reserve Working Circle:- **The total area included in the working circle was 19861 acres. All exploitable tree forests capable of producing small timber, poles and firewood were included in this working circle. The silviculture system was coppice with reserve. Four felling series were formed and rotation of forty years was fixed. The Plan prescribed preparation of the treatment map for the coupe to be worked. The treatment map was to be prepared by showing the following details.**

5.2.4.3. (A) Unworkable steep slopes and protection areas:- **It included steep slopes over 25°, understocked areas, eroded and erodable areas and nala banks up to 1 chain width.**

5.2.4.4. (B) Areas to be clear felled for raising Teak Plantation **on well drained deep soil capable of supporting III or IV quality teak. Each patch was not to be less than two acres in area.**

5.2.4.5. (C) Old Plantation and well stocked patches **of growing pole crop of valuable species not less 1 acre in extent as future crop.**

5.2.4.6. (D) Teak and miscellaneous forests **with density over 0.4 but less than 0.7 (excluding Salai forest).**

5.2.4.7. (E) Salai forest **over 0.4 density.**

5.2.4.8. (F) Remaining areas.

5.2.4.9. **The following marking rules were prescribed for each category:**

Categories	Prescriptions
(A)	<b>All dead and badly diseased and mature and over mature trees not likely to survive the entire rotation if silviculturally available were to be marked for felling.</b>
(B)	<b>These areas were marked for clear felling.</b>
(C)	<b>These areas were to be thinned.</b>
(D)	<b>In these areas only improvement felling was to be carried out by removing dead dying unsound, malformed, mature and over mature trees. No living tree was to be felled as it will create permanent gap in canopy and reduced density. Trees needed for seed and soil protection were also to be retained</b>
(E)	<b>Only light thinning was to be carried out to help well grown, sound and vigorous trees.</b>
(F)	<b>In these forests, all advance growth up to 9" girth at b.h. well grown poles of teak and other valuable species e.g. Bija, Shisham, Haldu, Ain, etc. up to 30 cm. gbh in quality IVb area up to 45 cm. Quality III area to be reserved. All fruit bearing healthy trees and also Semal, Tendu, Khair were to be retained and rest of the trees were to be clear felled.</b>

5.2.4.10. **Soon after the completion of main felling, cutting back operation (CBO) involving removal of unfelled marked trees and damaged trees, cutting back of malformed and suppressed advance growth of teak, cutting of climbers and disposal of debris was prescribed. The cleaning and thinning were prescribed in 6<sup>th</sup>, 11<sup>th</sup>, and 21<sup>st</sup> years in the coppice as well as in the plantation crop. The average spacing to be achieved was around 1/3 rd of the height of the crop.**

5.2.4.11. **The reservation of trees prescribed was not qualified and in normal circumstance it would lead to reservation not conducive to growth of coppice regeneration. Coppice regeneration should be supplemented by seedling regeneration in normal course. In other working circles due to ineffective protection against grazing and fire there is no seedling regeneration. The prescriptions have not been followed in respect of carrying clear felling over 0.7 density only. Also plantation have not been raised over 2 ha. in the coupes worked. Due to favour to Teak, non-Teak species have become sparse. Due to depletion of forest cover lantana has invaded large tract especially in Wai felling series along the road.**

5.2.5.1. Improvement Working Circle:- It included 13,738 acres (5495.2 ha) formed into two fellings series. The areas allotted to the working circle were understocked due to continuous maltreatment and unrestricted grazing in the past. Chirodi felling series was divided into 30 coupes and Wishroli felling series into 20 coupes. The plan prescribed for preparing a treatment map by an officer not less than the rank of Range Forest Officer. The treatment map was to be prescribed by showing followings details:-

- (A) Unworkable and protection area included the slopes over 25°, understocked areas, eroded and erodable area and one chain wide strip along nala banks.
- (B) Areas to be clearfelled for raising plantation in the suitable areas should not be less than 2 acres.
- (C) Old plantation and dense patches of young well grown crop of valuable species.
- (D) Remaining areas.

5.2.5.2. The following rules were laid down for the above categories.

5.2.5.3. "A" type areas:- Except for dead trees, marking of any other tree was not permitted.

5.2.5.4. "B" type areas:- Area was to be marked for clear felling and plantation of suitable species like Teak, Anjan, Prosopis and eucalyptus hybrid was to be carried out.

5.2.5.5. "C" type areas:- Light crown thinning was prescribed in favour of well grown Teak and other valuable species.

5.2.5.6. "D" type areas:- In Salai forests light crown thinning was prescribed. It was prescribed to remove dead, unsound, dying and seriously diseased and over mature trees if not for protection of site and supply of seed. All living trees of economic importance were to be retained. It was also prescribed to remove miscellaneous growth and Bamboo interfering with well grown Teak or other economically valuable species. Light crown thinning was prescribed in congested group favouring Teak and other superior species. Malformed Teak reproduction up to 12" was to be cut back.

5.2.6.1. Cut Back Operation (C.B.O.) immediately after the completion of coupe working was also prescribed. It was also mentioned to carry out cleaning in 6<sup>th</sup> year and then thinning in 11<sup>th</sup> year and 21<sup>st</sup> year. Singling of coppice shoot and light crown thinning was prescribed.

5.2.6.2. This working circle was formed in the Chirodi Plantation Working Circle of the previous plan. During the course of the previous plan itself, the prescription was changed from the plantation to improvement. During the plan period the area has hardly shown any improvement as no improvement work was taken up. No plantation were taken up under category 'B'.

5.2.7.1. Babul Ban Working Circle:- All area suitable for raising babul were allotted to this working circle. The total area allotted to this working circle 9935.25 acre. (3974.1ha) divided into fourteen felling series and each felling series was in turn divided into 30 annual coupes. The plantations were to be raised by agri-silvicultural method. Babul (*Acacia nilotica*) was to be planted on good soil while plantation of other hardy species like *Prosopis juliflora*, *Acacia catechu*, *Dalbergia sissoo* and *Azadirachta indica* were prescribed on poor soils.

5.2.7.2. Few of the initial plantations were raised successful. They were mostly on good soils. The subsequent plantations fared badly because of many reasons. Firstly there was too much of biotic interference and secondly because of choice of wrong species. Babul was planted on unsuitable sites of murrummy soil like that of murrummy soil. Babul planted on the black cotton soil has fared extremely well.

5.2.8.1. Kuran Working Circle:- **The total area allotted to this working circle was 13974.27 acres (5589.7 ha). There are 29 ramnas in the Division. 21 were already developed and remaining 8 have been developed during previous plan period. Some of the grass ramnas are excellent while a few have deteriorated. The method of treatment prescribed in this working circle during the plan period was as under:-**

- (a) Complete closure to grazing
- (b) Fencing the area, which are liable to heavy illicit grazing with barbed wire. The fencing was to be completed in phases.
- (c) Uprooting of the obnoxious weeds before their fruiting.
- (d) Light burning was prescribed before monsoons and broadcasting of seeds of good variety of grasses was prescribed after soil working.
- (e) The dense patches of shrubs and trees were to be opened up.
- (f) Planting of tree species at a spacing of 50' x 50'
- (g) Edible fruit and flower trees were to be reserved.

Plantation of the fodder species and opening of dense patches of shrub and tree was generally not done. Light burning in some of grass reserves was done, but seeds of grasses were broad cast without soil working with the result that the grasses did not establish. Some soil conservation works are also required occasionally, which was not done.

5.2.9.1. Miscellaneous Working Circle:- **This included the compartment belonging to the forest villages. No treatment was prescribed for the land, which had a good forest cover. This resulted in deterioration of the existing forest cover in these compartments. No prescription was prescribed to demarcate the land outside the agricultural use within the compartment. It resulted in to encroachment on the forest land.**

5.2.10.1. Bamboo (overlapping) Working Circle:- **This working circle overlapped with area of coppice with reserve working circle, mostly in Warud and Morshi Range. The working circle was divided into two felling series. A felling cycle of four years was prescribed. The following treatment was prescribed:**

- (a) No culms under one year would be felled.
- (b) A minimum of 8 culms over an year would be retained.
- (c) No dead bamboo would be left in worked clump.
- (d) The height at which the culms to be cut should be between 15 cm.to 45cm. above ground.
- (e) No digging of rhizome would be allowed.
- (f) No cutting of bamboo would be done from July to September.

**This working circle deteriorated due to heavy illicit felling of Bamboos.**

5.2.11.1. Working Plan by Shailendra Bahadur, IFS for the period 1991-92 to 2000-2001:

Upadhyay's working plan was taken under revision after a long gap and Shalendra Bahadur, IFS prepared the working plan for Amravati Forest Division for the period 1991-92 to 2000-2001. Based on factors affecting the general objects of management and objectives of National Forest Policy, Bahadur put forwarded following general objects of management: -

- (a) To preserve forest on the hill slopes and to prevent erosion of soil.
- (b) To satisfy the local demand for the forest produce.
- (c) To bring large area under plantation with a view to cover the soil and to provide fuel and fodder to the local people.
- (d) To ensure a maximum sustained yield from the existing forests.

That working plan encompassed the entire Reserved Forests (both A and C Class) areas of Amravati forest division. The total area covered was 51493.248 ha. which is in charge of the forest department. This working plan did not cover 55.790ha. area, which is unclassified but which, is included in the area of the division. The following working circles were carved out:-

- (i) Coppice with Reserve working circle
- (ii) Improvement working circle
- (iii) Fuel wood working circle
- (iv) Kuran working circle
- (v) Afforestation working circle
- (vi) Bamboo Plantation (overlapping) working circle
- (vii) Miscellaneous working circle
- (viii) Wild life Management (overlapping) working circle.

Range wise and working circle wise area allotted to each working circle is given below:

Ranges	IWC	CWR	KWC	FWWC	AWC	MiscWC	Total
Amravti	5325.8	----	4929.2	1777.6	9337.3	32.1	21401.9
Paratwada	1755.6	----	953.267	458.1	4891.5	----	8058.4
Warud	----	6642.7	164.8	121.4	3111.7	124.7	10165.3
Morshi	----	1405.04	1416.8	2015.0	5966.8	1007.9	11811.9
Total	7081.3	8048.1	7464.1	4372.0	23307.3	1164.7	51437.5

Where : IWC = Improvement Working Circle, CWR = Coppice with Reserve,  
 KWR = Kuran Working Circle, FWWC = Fuel Wood Working Circle,  
 AWC = Afforestation Working Circle. MiscWC = Miscellaneous Working Circle.  
 All areas are in hectare.

5.2.11.2. Coppice with Reserve Working Circle:- It included the areas of Shekdari, Mehendri and Lakhara reserves. Total areas covered under that is 8048.052 ha. These areas contain some good tree forests growth of Teak, and other valuable species but the overall quality of the forest is poor and are capable of producing only small sized timber and fuel wood.

5.2.11.3. Out of the total area allotted to this working circle, about 47% is teak forest, 25% as mixed forest and the remaining is understocked and blank. The common associates of teak are Dhaora, Lendia, Khair, Tendu, Saja, Salai, Dhaman, Mahua etc. In these forests, the regeneration from coppice shoots is satisfactory and that from the seed is negligible.

5.2.11.4. Following were the special object of management:

- (a) To improve the growing stock by intensive regeneration operations and tending of the crop.
- (b) To obtain the maximum sustained yield of small timber, poles and firewood.
- (c) To meet the local demand of the people for fuel, fodder etc.

5.2.11.5. The silvicultural system prescribed was coppice with reserve and the regeneration was to be achieved through coppice regeneration supplemented by artificial regeneration. The species to be planted were Teak, Ain, Bija, Shisham, Dhaora, Tendu and Semal. The efforts were to be made during main felling and thinning to have the crop composition as 50% teak and 50% other mixed species.

5.2.11.6. The rotation of 40 years was proposed with 75 centimeters girth at breast height as the exploitable girth. In better site quality areas reserve up to 45 cms. to 60 cms. girth could be retained. The following four felling series were formed with the area mentioned before each.

Range	Felling series	Areas (in ha)
Morshi	Lakhara	1405.400
Warud	Linga	1989.936
	Wai	2307.146
	Shekdari	2345.570
Total Areas (in ha)		8048.052

5.2.11.7. Main felling coupe was to be demarcated 4 years in advance and coupes were to be divided into four sections. All climbers were required to be cut.

5.2.11.8. Trees to be reserved:

- (i) In workable areas:- **In workable areas of coupes due for main felling, all trees of girth class 60-75 were to be first selected and given one coaltar band at breast height after scrapping the dead bark and were serially numbered.**
- (ii) In unworkable areas:- **In unworkable areas all trees are to be reserved and unworkable areas were to be clearly demarcated to show it unworkable.**

5.2.11.9. Trees to be removed:-: **The area were to be clear felled retaining all fruit bearing trees.**

5.2.11.10. Method of obtaining advance seedling regeneration:- **Soon after the demarcation of the coupe and section lines, a treatment map was to be prepared by the Range Forest Officer for taking up plantation showing the following aspects:**

- (A) Protection areas.  
(B) Blanks and under stocked areas.  
(C) Pole crop.  
(D) Well stocked areas. (density 0.4 to 0.6)  
(E) Well stocked crop. (density over 0.6).  
(F) Areas containing adequate seedling regeneration i.e.20 saplings over 1 meter in height or young poles up to 15 cm girth per 20m x 20m areas.  
(G) Areas not containing adequate regeneration.

5.2.11.11. Method of planting:- **Four to five species were to be chosen for plantation with due care that no species exceed by 50% in composition. Soil and moisture Conservation works were also prescribed.**

5.2.11.12. Marking rules: **Climbers would be cut all over the areas of the coupe. All dead trees would be marked for felling. In (A) type areas no trees would be marked for felling. All live high stumps would be marked for felling and recoppicing. In (B) type areas no marking of green trees for felling would be done. And in (C) type areas congested group of young pole would be thinned so as to bring the spacing to approximately 1/3<sup>rd</sup> of height of the group and in well stocked areas all Semal and Kullu tress would be retained. All healthy trees of Salai up to 90 cm girth be retained if not interfering with the growth of superior species**

5.2.11.13. Results: **The required coppice regeneration was not obtained & the existing crop is of seed origin mainly.**

5.2.11.14. Improvement Working Circle:- **This working circle included areas of Improvement Working Circle of the previous working plan. The area was under stocked but contained sizeable patches of well stocked forests. These forests had degraded due to biotic pressure because of their nearness to the habitation. The site were however suitable for raising plantations of valuable species. The extent of area assigned to the working circle was as under:-**

Range	Area of the Working Circle ha.	% of the forest area of the Range	% of the forest area of the Division
<b>Amravati</b>	<b>5325.751</b>	<b>24.88%</b>	<b>10.35%</b>
<b>Paratwada</b>	<b>1755.588</b>	<b>21.76%</b>	<b>3.41%</b>
<b>Warud</b>	----	----	----
<b>Morshi</b>	----	----	----
Total	7081.339		13.76%

5.2.11.15. This is mostly Salai forest. Site quality is IV. These are open and under stocked forests. Mixed forests are met with on lower slopes of Chirodi reserve. Existing crop is malformed and crooked due to heavy illicit cutting. The important species occurring in the area are Salai, Anjan, Char, Khair, Teak, Movai, Tendu, Bhosa, Bor etc. The natural regeneration of Teak and other species is scanty. In few favourable sites good plantations of Teak, Khair, Salai, Anjan, Bor etc. raised under agri-silvi method can be seen in Chirodi Reserve. The entire forest is infested by Lantana, an exotic weed introduced in Melghat some decades ago. Bamboo is found along nalas near Pohara and Chirodi.

5.2.11.16. Following were the special objects of management of the forests included in this working circle:

- (a) To check soil erosion by creating and maintaining proper vegetation cover.
- (b) To improve the stock, composition and condition of existing forests.
- (c) To get maximum sustained outturn of small sized timber and firewood which are locally in demand.

5.2.11.17. The felling in these forests was to be carried out purely on silvicultural considerations, which aimed at improving the growing stock. A felling cycle of twenty years for the purpose of improvement was prescribed. The Working Circle had been divided into five felling series and each into 20 annual coupes. The felling series are as under

Ranges	Name of felling series	Area in hectare
1.Amravati	i) Pohra	1356.506
	ii) North Chirodi	1188.157
	iii) South Chirodi	1465.043
	iv) Wadhona	1316.045
2.Paratwada	v) Wishroli	1755.588
Total:		7081.339

5.2.11.18. Teak was the principal species (50% in mixture) followed by its valuable associates like Ain, Salai, Khair etc. for raising plantation. In areas not suitable for raising Teak plantations species like Anjan, Khair, Chandan etc. was to be tried.

5.2.11.19. Method of executing fellings:- Felling would be carried out in following manners:

Coupes were demarcated one year in advance, after demarcation treatment map was prepared by dividing area into four zones as protection areas, old plantations, under stocked areas with density below 0.4 and remaining areas and same was demarcated on the ground.

5.2.11.20. Result:- Plantations have been taken in these areas under various schemes or project but the results are not satisfactory due to various reasons as lack of protection from grazing, fire, drought, improper selection of species etc.

5.2.11.21. Afforestation Working Circle:- This working circle included entire C- class Reserved Forests and all such compartments and sub-compartments, which have sparse tree growth below 0.4 density and are in degraded state. Due to heavy and excessive grazing, over-exploitation and failure of regeneration, the areas have become denuded and the depth and quality of the soil is poor. The total area included in this working circle was 23307.313 hectares. Out of which 8065 ha. was to be reforested during this plan period.

Range	Area in hectare	Percentage to the total area of Range	Percentage to the total area of the division
Amravati	9337.272	43.51	18.13
Morshi	5966.785	50.51	11.58
Warud	3111.728	30.61	6.04
Paratwada	4891.528	60.70	9.49
Total:-	23307.313	185.33	45.24

The areas allotted to this working circle are barren and the soil is under various stages of erosion. Stunted growth of Bor, Ain, Khair, Palas and Teak are occasionally met with. The regeneration of tree species is absent. Good patches of vegetation are rare. Few plantations have been taken. The special objects of management were as follows:

- (i) To conserve soil and moisture in the area by taking appropriate measures of reforestation.
- (ii) To enhance the productivity of forest land and produce fuel, Palas, Bamboos and small timber for the local population and fodder grass for the cattle.
- (iii) To restore ecological balance by increasing vegetal cover.

5.2.11.22. The existing crop found in patches, contained malformed growth to a considerable extent. To improve the condition of the crop it was necessary to cut back the stems that are capable of throwing vigorous coppice shoots. Improvement fellings were prescribed on well stocked patches. The blanks and under stocked areas were to be planted up with hardy species. The areas already afforested were also to be suitably tended and failed areas reboised by planting species suitable to the site. Where ample root stock in degraded forests was available, the same was to be protected and tended. Planting of hardy species was to be done wherever feasible.

5.2.11.23. With a view to cover the whole area of the working circle as quickly as possible, reforestation period of 20 years was fixed. Planting coupes have been identified for this plan period. There was however no objection if more areas than identified were also planted up subject to the availability of resources, with due regard to grazing requirements of the village cattle.

5.2.11.24. Demarcation of coupes was to be done 2 years in advance of the year of planting. Removal of trees marked for felling was to be completed in the year of demarcation itself.

5.2.11.25. Result: In afforestation working circle total plantations taken during Bhadur's Plan were 2502 ha. The survival percentages ranges from 13 to 77%. The average survival percentage is 42%. The species, which showed good result, are Teak and Khair. Other species couldn't survive due to grazing pressure.

SECTION: 5.3: SEPCIAL WORKS OF IMPROVEMENT UNDERTAKEN:

5.3.1.1. In 1888 fire protection was introduced in Mehedari reserve and in 1893 in Lakhara reserve. All Babul Bans, fodder reserves and the Chirodi reserves were under general fire protection. Special fire protection measures were adopted for young plantation and worked coupes closed for grazing. "C" class areas were protected by law and no special fire protection measures were taken.

SECTION:5.4: PAST YIELD:

5.4.1.1. The annual revenue outturn of the major and minor forest produce is at Appendix No.XVIII.

SECTION: 5.5: PAST REVENUE AND EXPENDITURE:

5.5.1.1. The details of revenue and expenditure are given in the Appendix No. XIXA and XIXB.

Statement of Revenue for last 10 years (Revenue is in rupees)

Year	Timber (Cubic meter)		Fuel wood		Grass & grazing		Bamboo	
	Outturn	Revenue	Outturn	Revenue	Outturn	Revenue	Outturn	Revenue
1	2	3	4	5	6	7	8	9
1989-90	NA	4,60,338	NA	3,41,834	NA	1,74,507	NA	NA
1990-91	"-	9,02,849	"-	26,636	"-	1,98,317	"-	"-
1991-92	"-	8,56,332	3,70,563	64,380	"-	1,57,520	"-	"-
1992-93	"-	8,07,452	"-	2,500	"-	98,959	"-	"-
1993-94	"-	3,99,376	7,17,000	2,05,542	"-	1,09,919	"-	"-
1994-95	13.285	2,05,519	2	5,386	"-	1,46,560	"-	"-
1995-96	97.007	9,54,604	65,500	22,812	"-	1,05,958	"-	"-
1996-97	533.855	54,36,779	2,74,372	12,150	"-	1,87,478	"-	"-
1997-98	171.271	59,46,968	19,25,441	1,08,994	"-	1,68,984	"-	"-
1998-99	186.932	45,35,038	191	20,920	"-	1,52,264	"-	"-

Russa Grass		Gum		Tendu (std.bags)		Other		Total	
Outturn	Revenue	Outturn	Revenue	Outturn	Revenue	Outturn	Revenue	Outturn	Revenue
10	11	12	13	14	15	16	17	18	19
NA	5,665	NA	1,55,400	442.662	8,11,603	--	3,13,032	--	22,62,379
"-	Nil	"-	65,800	2150.382	20,92,251	--	3,57,057	--	36,42,910
"-	"-	1488.22	1,59,500	4335.292	8,04,989	--	11,47,447	--	31,90,168
"-	"-	NA	98,200	5971.809	14,35,000	--	3,11,750	--	27,53,861
"-	"-	"-	1,12,000	4353.693	17,90,000	--	5,65,325	--	31,82,162
"-	"-	"-	Nil	NA	21,38,000	--	3,38,940	--	28,34,105
"-	"-	"-	"-	4333.849	22,66,666	--	640,119	--	39,90,159
"-	"-	"-	"-	3636.97	23,65,700	--	6,23,523	--	86,25,630
"-	500	1016.48	1,15,000	3341.211	19,24,968	--	9,06,228	--	91,71,642
"-	2100	1274.7	1,10,000	4825.215	17,35,059	--	1,45,573	--	67,00,954

Statement of expenditure for last 10 years

Year	Revenue	EXPENDITURES ( in rupees)				Surplus (+) Deficit (-)
		Conservancy	Establishment	Development	Total	
1	2	3	4	5	6	7
1989-90	22,62,379	Nil	45,54,099	41,16,705	86,70,804	(-) 64,08,425
1990-91	36,42,910	Nil	45,66,695	1,80,71,260	2,26,37,955	(-) 1,89,95,045
1991-92	31,90,168	Nil	51,05,790	1,26,70,179	1,77,75,969	(-) 1,45,85,801
1992-93	27,53,861	Nil	59,83,086	2,14,98,372	2,74,81,458	(-) 2,47,27,597
1993-94	31,82,162	Nil	70,09,797	2,26,36,721	2,96,518	(-) 2,64,64,356
1994-95	28,34,105	Nil	73,86,520	2,06,58,151	2,80,44,671	(-) 2,52,10,566
1995-96	39,90,159	Nil	1,17,81,117	2,38,17,534	3,55,98,651	(-) 3,16,08,492
1996-97	86,25,159	Nil	1,58,35,618	2,20,12,957	3,78,48,575	(-) 2,92,22,945
1997-98	91,71,642	Nil	1,89,82,885	3,02,28,634	4,92,11,519	(-) 4,00,39,877
1998-99	67,0,954	Nil	2,19,38,973	2,30,54,642	4,49,93,615	(-) 3,82,29,661

SECTION:5.6:

5.6.1. Working Plan by Vinod Kumar, Ramji Singh Yadav and G.P.Garad for the period 2004-05 to 2013-14.

**Shailendra Bahadur's plan was followed by the working plan written by Vinod Kumar, Ramji Singh Yadav and G.P.Garad's for the period of 2004-05 to 2013-14.**

Main feature of this plan was 15097.242 ha. area which was worked under Coppice with Reserve Working Circle and Improvement Working Circle of Shailendra Bahadur's plan was transferred to Selection Cum Improvement Working Circle. The major reason was that the Coppice with Reserve Working Circle failed to produce expected result since regeneration was of seed origin and there was not much improvement observed in the Improvement Working Circle. Thus the special objectives for prescribing this Working Circle was,

1. To improve the crop stocking, composition and condition.
2. To get maximum sustained out turn of small sized timber and firewood to meet the local demand.
3. To involve JFMC in protection harvesting, regeneration and forest related activities.

In Shailendra Bahadur's working plan the area allotted to Afforestation working circle is 23307.313 ha. During above plan the area allotted is 27386.055 ha. Babul Ban management was the part of this working circle to manage them on sustained basis was the main object.

Kuran Working Circle proposed includes entire area of Kuran Working Circle of Bahadur's working plan which includes 52 Ramnas. Area allotted to this Kuran Working Circle is 7451.226 ha. Areas of this working circle getting degraded due to heavy biotic pressure and also heavily invaded by obnoxious weeds like Rantulsi, Raimunia, Gajargawat and Tarota. Removal of obnoxious weeds and thorny shrubs and reintroduction of superior fodder grasses was the main object of this Working Circle. For Miscellaneous Working Circle no specific work for prescribed and no specific work has been done in this area.

Table No.5.1  
Area allotted to various working circles.

Sr. No.	Working Circle	Area
01	Selection Cum Improvement Working Circle	15097.242
02	Afforestation Working Circle	27386.055
03	Kuran Working Circle	7451.226
04	Miscellaneous Working Circle	1565.356
Total:-		51499.879

1) SELECTION CUM IMPROVEMENT WORKING CIRCLE -

Total area allotted to this Working Circle was 15097.242 ha. It was divided into Nine Felling Series.

Table No.5.2

Sr. No	Range	Working Series	Compartments	Area (ha)
1	Warud	Wai	93,94,95a,95b,96,97,98,99,100a,100b,102a,102b,103b,	2307.146
2	Warud	Linga	103a,104a,104b,105,106,107,108,109,110.	1989.936
3	Warud	Shekdari	83a,83c,84,85,86,87,88,89,90,91,92	2345.570
4	Morshi	Lakhara	72a,72b,73,74,75,76a,76b,77a,7b,78,79,80,81,82.	1405.401
5	Paratwada	Wishroli	111to113,114to117,121,121a121b,122p,123,124p,125p	1727.038
6	Amravati	Wadhona	47,48,49,50a,50b,51,52,53,54a,54b,55,56	1312.445
7	Amravati	Pohra	27,28,39,40,41	1356.506
8	Amravati	North Chirodi	34a,35,36,37,38	1188.157
9	Amravati	South Chirodi	28a,29a,30a,31,32,42a,43,45,33a,43,44,46.	1465.043
Total area of SCI WC in division -				15097.242

It was expected that coupe No.I would have been worked in the Year 2004-05. But the information submitted by Deputy Conservator of Forests, Amravati Division, Amravati reveals that schedule for the felling of coupe No.I was not followed properly. Coupe No.I Shekdari was worked during 2006-07 and coupe No.I Linga, Wai, Lakhara were worked in 2008-09. While coupe No.I Linga was worked in 2011-12 instead of 2006-07. Majority of the coupes of Amravati and Paratwada Ranges were not worked. Main timber and firewood exploitation was carried out from Warud and Morshi ranges. Total 45 coupes out of 90 allotted coupes had been worked and the timber and firewood obtained are 3717.22 Cum. and 21189.36 Cum. respectively. The total revenue realized is Rs.4.42 Crores.

Working Series like Pohara, North and South Chirodi of Amravati range and Wishroli of Paratwada range are highly degraded due to heavy biotic pressure. Existing crop is malformed and crooked, hence coupe working has been not carried out as per working plan prescription. Coupes of Warud, Morshi Ranges like Lakhara, Shekdari, Wai, Linga have been worked.

## 2) AFFORESTATION WORKING CIRCLE –

In the last working plan all “C” Class forest and area of all Babul Ban was allotted to this working circle. Details of the area allotted to this Working Circle is as follows.

Sr.No	Range	Range area	C Class	Babul Bans	AWC area
1	Amravati	21457.662	9292.452	1764.667	11057.119
2	Paratwada	8058.406	4690.258	458.023	5148.281
3	Morshi	11424.562	5554.074	2012.583	7566.657
4	Warud	10559.248	3492.566	121.432	3613.998
Total of Division		51499.878	23029.350	4356.705	27386.055

**SPECIAL OBJECTS OF MANAGEMENT:** These areas have degraded due to heavy grazing, illicit cutting and fire. Keeping in view these factors, special objects of management for these areas will as follows:-

- (i) To reclaim the suitable area by afforestation works and to enhance the productivity through planting of indigenous species of small timber, firewood and fodder value to meet the local demand wherever the grazing pressure is less and soil is good.
- (ii) To involve the local people in afforestation works through Joint Forest Management.
- (i) To meet the demand of local people for small timber, firewood and fodder to the maximum possible extent.
- (ii) To manage the existing Babul bans on sustained basis.

‘C’ Class Reserve Forest area was divided in 13 Afforestation Working Series and each having 30 coupes. While ‘A’ Class Babul Ban had only one Afforestation Working Series and same number of annual coupes almost one coupe in each Range every year with few exceptions to Warud Range. No. of compartments allotted to ‘C’ Class area were 350 and No. of compartments allotted to ‘A’ Class Babul Ban were 512.

In ‘C’ class area afforestation work was proposed every year. The choice of species will depend upon soil type, its depth, drainage and local requirements. However indigenous species of small timber, fire wood and fodder were preferred. In Babul Ban it was expected that Babul will attain 105 cm. g.b.h. at the age of 35 years. Crop will be harvested. After harvesting area will be ploughed and Babul seeds sown before on set of monsoon. But the information furnished by the division reveals that no such work has been taken up in the last plan period.

Afforestation work on 3428.714 ha. has been taken up under various schemes and 225.00 ha. of Natural Regeneration works has been taken up to support the Artificial Regeneration results of afforestation works are not encouraging as the survival percentage is very low.

### 3) KURAN WORKING CIRCLE –

Area of Kuran Working Circle is same as of last plan. It is 7451.226 ha. which included 52 Ramnas. Details of the areas is follows.

#### KURAN WORKING CIRCLE: AREA IN HECTARE

Sr.No.	Range	Range area	A Class	C Class	Total area
1	Amravati	21457.662	3634.695	1294.456	4929.151
2	Paratwada	8058.406	953.267	552.088	1405.561
3	Morshi	11424.562	853.473	000.000	953.267
4	Warud	10559.248	000.000	163.247	163.247
Total of Division		51499.878	5441.435	2009.791	7451.226

#### SPECIAL OBJECTS OF MANAGEMENT:

- i) To improve the quality and quantity of fodder in the forest by introducing the better varieties of fodder grasses and fodder tree species.
- ii) To meet the local demand for fodder and thereby to reduce heavy grazing pressure on the forests.
- iii) To cover the whole area and prevent site erosion.
- iv) To involve JFMC committees in the management of Kurans.

In the last Working Plan whole area divided into 5 coupes and treatment was prescribed for the working of these as follows:-

- i) All obnoxious weeds and thorny shrubs bushes will be uprooted. 10% area fit for ploughing and sowing of seeds will be selected.
- ii) The seeds of superior fodder grasses like Sheda, Paunya and Marvel etc. will be sown after ploughing the area.
- iii) The fodder grasses raised will not be permitted to be cut during the first two years of their introduction so as to allow them to seed and multiply.
- iv) The area under treatment will be effectively fire traced every year. It will be permanent closed for grazing. Cutting of grasses will be allowed after 31<sup>st</sup> of October from third year onwards.

These Ramnas brought under control of various JFMC's. Some of them are getting revenue from sale of fodder to the locals, thereby maintenance and utilization of grasses is being done. Except in Paratwada range no working was carried out due to paucity of funds.

### 4) MISCELLANEOUS WORKING CIRCLE –

Total 1565.356 ha. area has been allotted to this working circle. There is no treatment prescribed and as per record no works carried out.

### 5) OLD TEAK PLANTATION (OVER LAPPING) WORKING CIRCLE –

Total 590.71 ha. of area has been allotted to this working circle. No works were carried out in this area. Therefore object of these provisions was defeated.

### 6) BAMBOO (OVER LAPPING) WORKING CIRCLE –

The objective of this Working Circle was to increase Bamboo production in a sustainable basis. Four year cutting cycle has been prescribed for the successful Bamboo plantation in the division area.

**SPECIAL OBJECTS OF MANAGEMENT:**

**The special objects of management of this working circle are as follows :**

- (i) **To boost up clump formation.**
- (ii) **To harvest bamboo from all over area scientifically to get the optimum sustained annual yield.**
- (iii) **To meet demand of the local population.**
- (iv) **To improve the crop to increase the productivity of the areas.**

Discretion of cutting of Bamboo was left to Deputy Conservator of Forests in charge of the division. The information furnished by the division shows that 1,26,116 long Bamboos harvested from Bamboo plantations from the year 2006-07 to 2012-13. The sale price of Rs.26,79,856 is realized.

Table showing the production of Bamboos.

Sr. No.	Year	Nos.	Amount in Lakhs
1	2006-07	5210	0.24
2	2007-08	2149	0.24
3	2008-09	2168	0.28
4	2009-10	14594	3.20
5	2010-11	34575	2.00
6	2011-12	54820	11.35
7	2012-13	12600	9.49
8	2013-14	-	-
Total		126116	26.80

**7) NON TIMBER FOREST PRODUCE (OVER LAPPING) WORKING CIRCLE –**

**Various NTFPs are being collected from the area allotted to this working circle.**

**SPECIAL OBJECTS OF MANAGEMENT:**

As per the National Forest Policy, 1988 the development of Non Timber Forest Produce and Medicinal Plants (NTFP) has been one of the objectives in the forest management. Therefore, consistent with the above policy, the special objects of management decided are as follows :

- (i) **To manage NTFP scientifically to utilize the existing potential optimally and thereby to enhance the productivity and production of the same.**
- (ii) **To take measures for its sustained yield.**
- (iii) **To generate employment for local people thereby improving their financial status.**
- (iv) **To provide better and improved quality of life and culture supporting items to the local people.**

As per the information made available from the division. Following table shows out turn of the various NTFPs and revenue realized.

Table showing Out-turn of NTFPs and Revenue Realized

Year	Grass		Sitaphal		Gum		Tendu		Bamboo	
	Production in MT.	Revenue (Rs in lakhs)	Production in MT.	Revenue (Rs in lakhs)	Production in MT.	Revenue (Rs in lakhs)	Out turn in SB	Revenue (Rs in lakhs)	Out turn in SB	Revenue (Rs in lakhs)
2004-05	78.00	1.37	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2005-06	48.305	1.20	13	1.78	4.18	1.39	3433	34.00	Nil	Nil
2006-07	40.00	0.58	15	1.59	7.07	0.45	4091	20.88	5210	0.24
2007-08	40.00	2.44	32	3.55	8.74	0.07	3015	42.085	2149	0.24
2008-09	50.00	1.12	10	2.50	0.20	0.10	3564	42.85	2168	0.28
2009-10	38.00	1.21	13	2.89	4.35	1.37	3995	32.38	14594	3.20
2010-11	65.290	0.59	20	3.89	5.83	0.40	3564	5.71	34575	2.00
2011-12	75.300	0.91	Nil	Nil	Nil	Nil	4090	9.13	54820	11.35
2012-13	Nil	Nil	Nil	Nil	Nil	Nil	3036	5.06	12600	9.49
2013-14	60.00	1.57	16.50	11.36	-	-	3036	27.56	18130	-

The JFM committees have been allotted part of the forest area of the division for management of forest resources. Out of these some of the JFM committees received Rs.6.95 lakhs and Rs.0.91 lakhs through the sale of Sitafal and Fodder respectively. Amount received from sale of Sitafal is during the year 2011-12 and 2012-13 whereas amount of fodder is of 2011-12. Amount received by JFMC is an incentive thereby developing the sense of ownership of forests amongst the members of JFMC.

The collection of Moha flowers and seeds is being done by individuals. Normally it is being utilized by themselves.

SECTION: 5.7: PAST YIELD:

5.7.1. The annual revenue outturn of the major and minor forest produce is given in the Appendix No.XVIII and XIXA.

SECTION: 5.8: PAST REVENUE AND EXPENDITURE:

5.8.1. The details of revenue and expenditure are given in the Appendix No.XXXI.

Statement Showing the Annual Out-turn of Timber, Bamboo, Firewood and Revenue Realized.

Year	Teak timber		Non-teak timber		Poles		Fire wood	
	Quantity in m <sup>3</sup> .	Revenue in Rs.	Quantity in m <sup>3</sup> .	Revenue in Rs.	Teak	Non teak	Quantity in m <sup>3</sup> .	Revenue in Rs.
2004-05	Nil	Nil	Nil	Nil	Nil	Nil	Nil	-
2005-06	836.094	236242	Nil	Nil	Nil	Nil	6367.848	400
2006-07	738.528	1273307	Nil	Nil	Nil	Nil	3356.400	-
2007-08	264.521	1543355	13.669	46000	Nil	Nil	1257.260	1912564
2008-09	626.772	12596294	10.373	51000	Nil	Nil	4495.290	425360
2009-10	521.316	2815954	1.131	5000	Nil	Nil	2648.400	1152986
2010-11	203.117	10143055	4.159	18000	Nil	Nil	1291.200	563642
2011-12	329.001	4615685	Nil	Nil	Nil	Nil	772.800	978340
2012-13	83.607	4131051	Nil	Nil	Nil	Nil	597.600	451496
2013-14	37.104	-	-	-	-	-	38.100	-

Statement Showing Total Revenue and Expenditure (all budget heads to be included)

Year	Total expenditure in Rs.	Total revenue in Rs.
2004-05	46051250	1808588
2005-06	47553253	1779859
2006-07	16809946	16314332
2007-08	22751548	3364125
2008-09	23250650	15531232
2009-10	20742706	6903654
2010-11	106421977	13375967
2011-12	11822297	9856311
2012-13	108250456	8266113
2013-14	216017000	6713000



CHAPTER – VI  
STATISTICS OF GROWTH AND YIELD

SECTION 6.1. STATISTICS OF THE RATE OF GROWTH

6.1.1.1. GROWTH OF TEAK:-

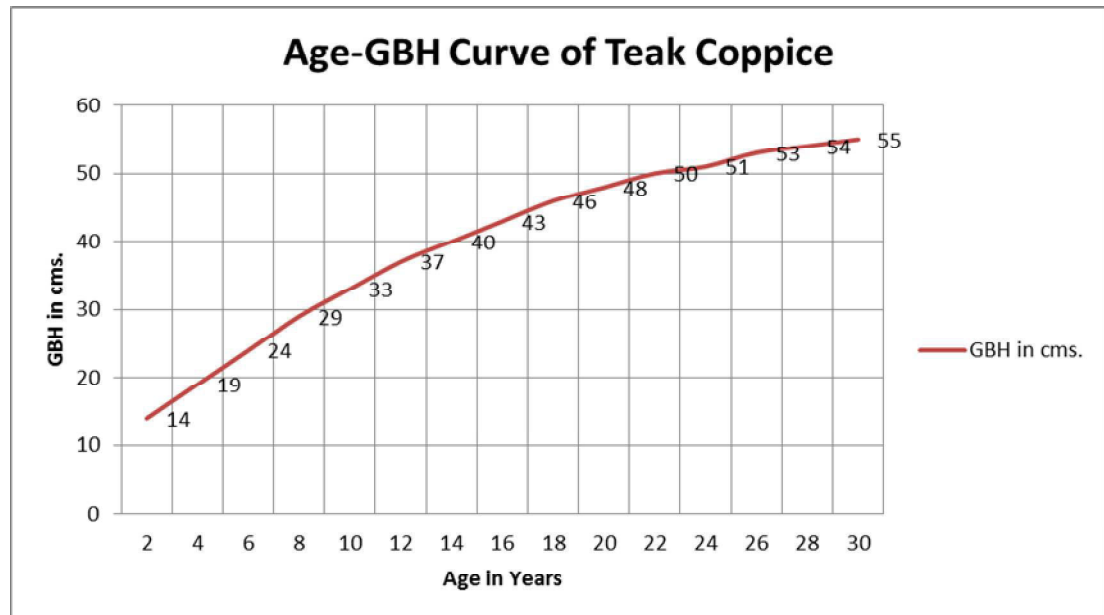
(i) From Upadhyay's Working Plan :-

**During the field work of this plan girth at B.H. and heights of coppice shoots were measured in coupes worked in the past. The rate of growth of Teak coppices as indicated by this curve is as follows. The following data is for the forests of Morshi Range.**

Age	GBH in cms.
02	14
04	19
06	24
08	29
10	33
12	37
14	40
16	43
18	46
20	48
22	50
24	51
26	53
28	54
30	55

**Above figures indicate that on an average Teak coppice attains a girth of 55Cms in a period of 30 years. In better quality areas i.e. areas with site quality IV and III, teak trees of coppice origin attains 65-75 centimeters girth at B.H. in 30 Years.**

Curve-I



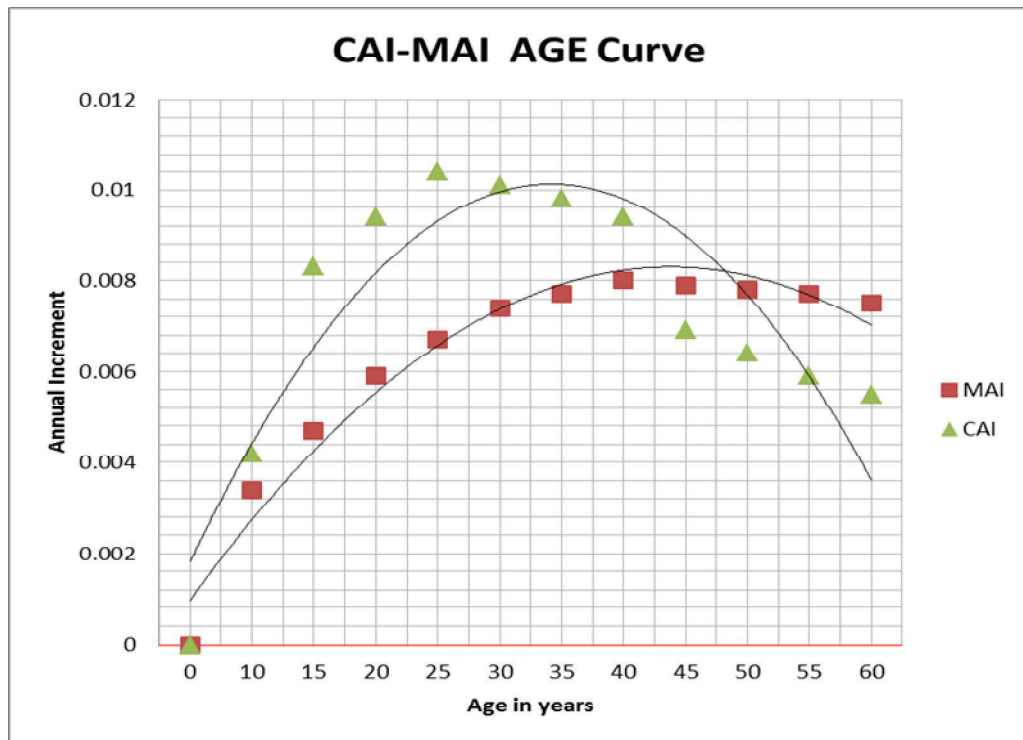
(ii) From Vinod Kumar, R.S.Yadav and G.P.Garad's Working Plan :-

6.1.1.2. **The stem analysis was carried out during preparation of this working plan. The results of coppice teak for site quality IV are given as below :-**

STEM ANALYSIS –

Age	MAI	CAI
0	0	0
10	0.0034	0.0042
15	0.0047	0.0083
20	0.0059	0.0094
25	0.0067	0.0104
30	0.0074	0.0101
35	0.0077	0.0098
40	0.0080	0.0084
45	0.0079	0.0069
50	0.0078	0.0064
55	0.0077	0.0059
60	0.0075	-

Curve-II



Result –For site quality IV the CAI and MAI curves meet at the age of 45 Years.

Taking correction for age at the breast height as 2 years the age of culmination for CAI and MAI is 47 years. At that age the Teak trees attains a girth of 74 centimeters.

## Results Of Stem Analysis

Site Quality :- III/IV

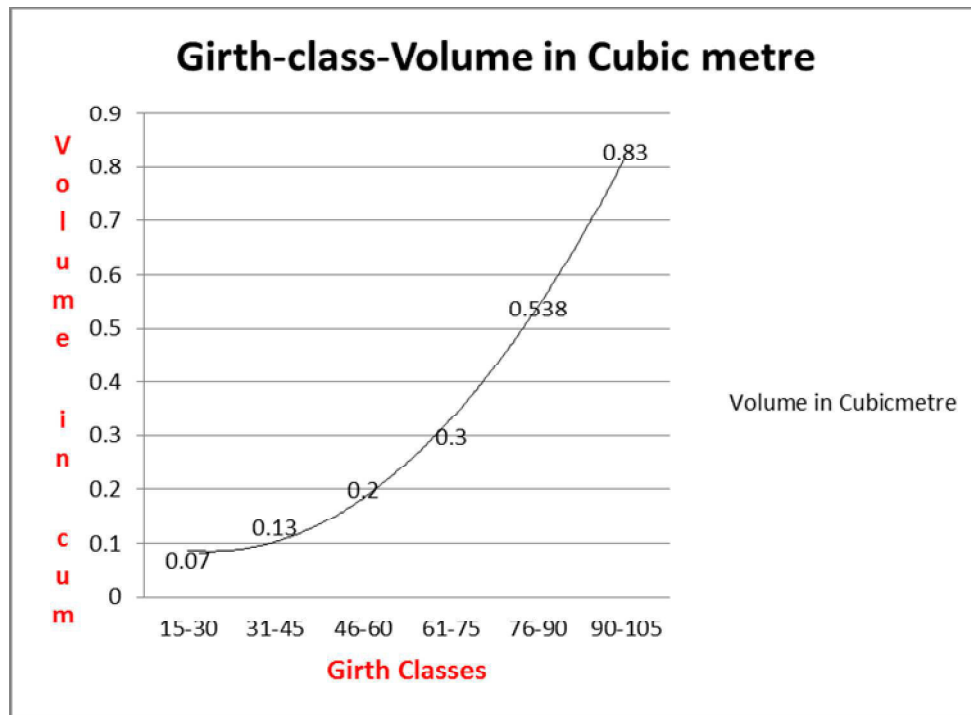
Division :- Amravati

**CAI/MAI curves intersect at 70 years of age and corresponding dia (o.b.) at b.h. is 34.5 cm. and girth is 108 cm. as shown in diameter (o.b.) / age curve. Hence harvestable girth recommended for Teak (*Tectona grandis*) is 105 cm. at breast height.**

Curves & Data follows:-

S. No.	Girth Class in cm.	Volume in cum.
1	15-30	0.070
2	30-45	0.130
3	45-60	0.200
4	60-75	0.300
5	75-90	0.538
6	90-105	0.830

Curve-III

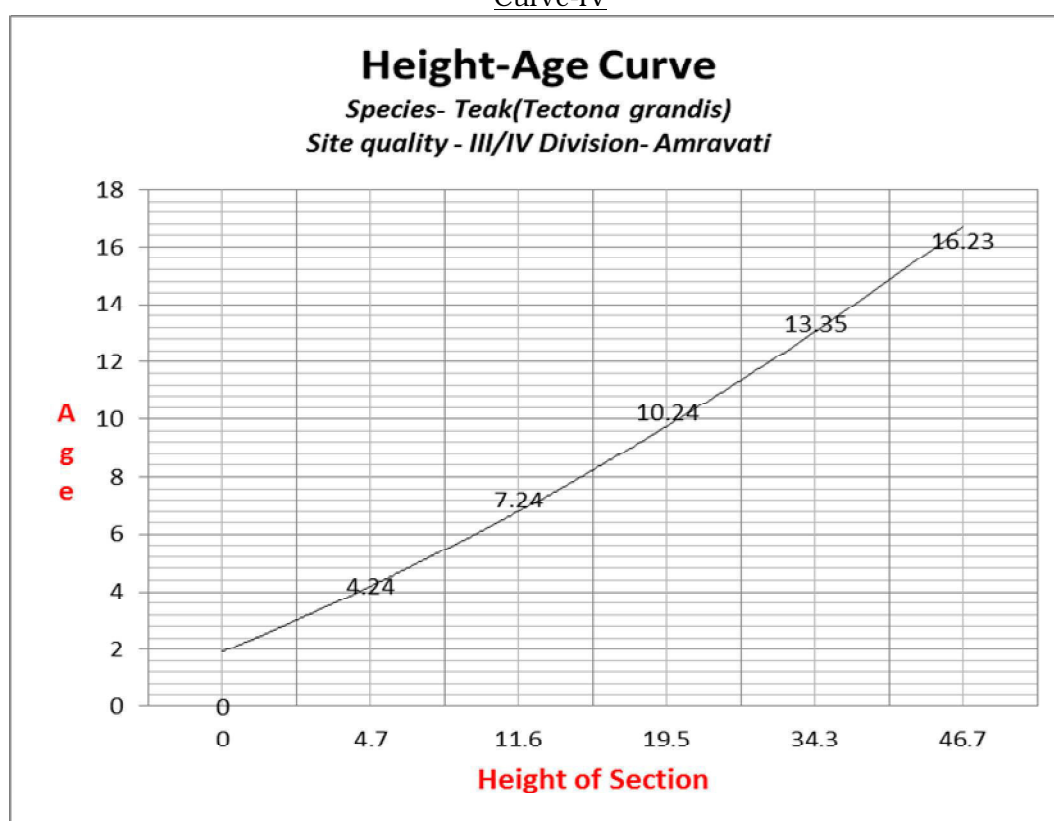


### Stem Analysis

**Curve (Height/Age)**  
**Species:Teak (*Tectona grandis*)**  
**Site Quality: III/IV**  
**Division :Amravati**

Age	ht.of section in m.
0	0
4.7	4.24
11.6	7.24
19.5	10.24
34.3	13.35
46.7	16.23

Curve-IV

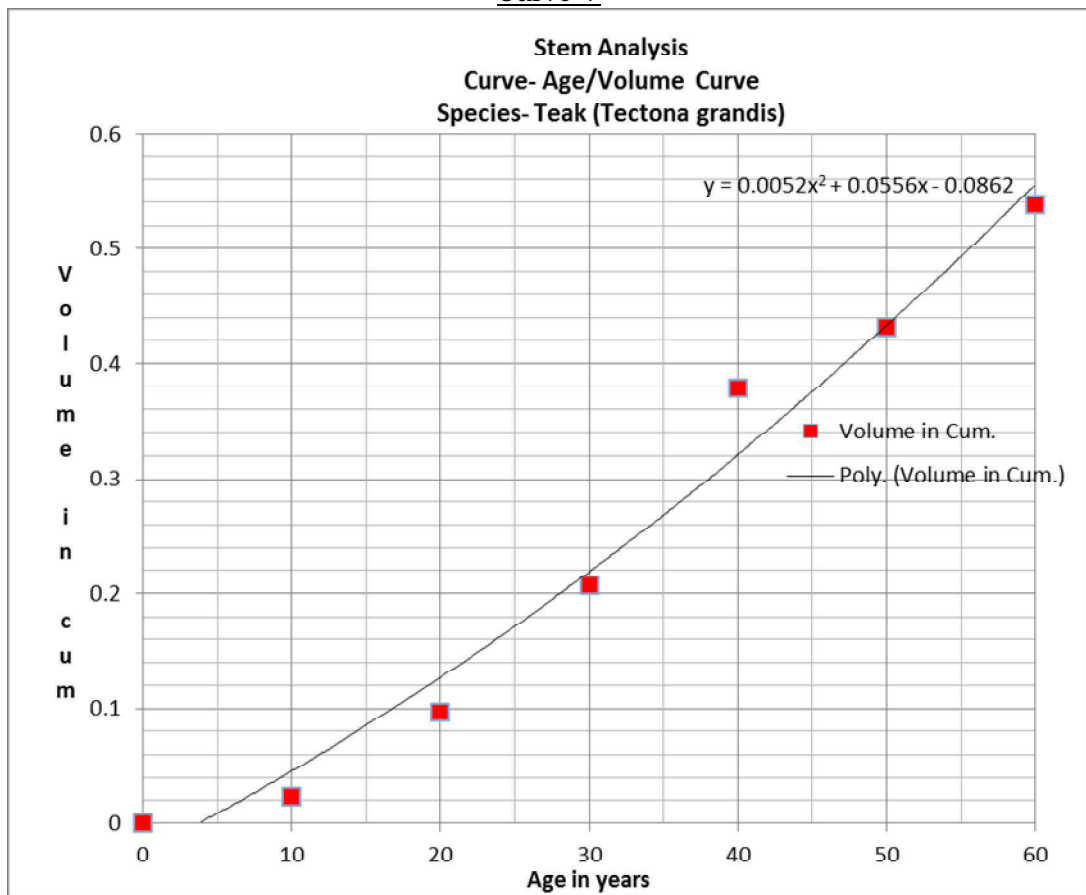


Stem analysis  
**Curve - Age/Volume Curve**  
**Species : Teak (*Tectona grandis*)**  
**Site Quality :III/IV**

**Division: Amravati**

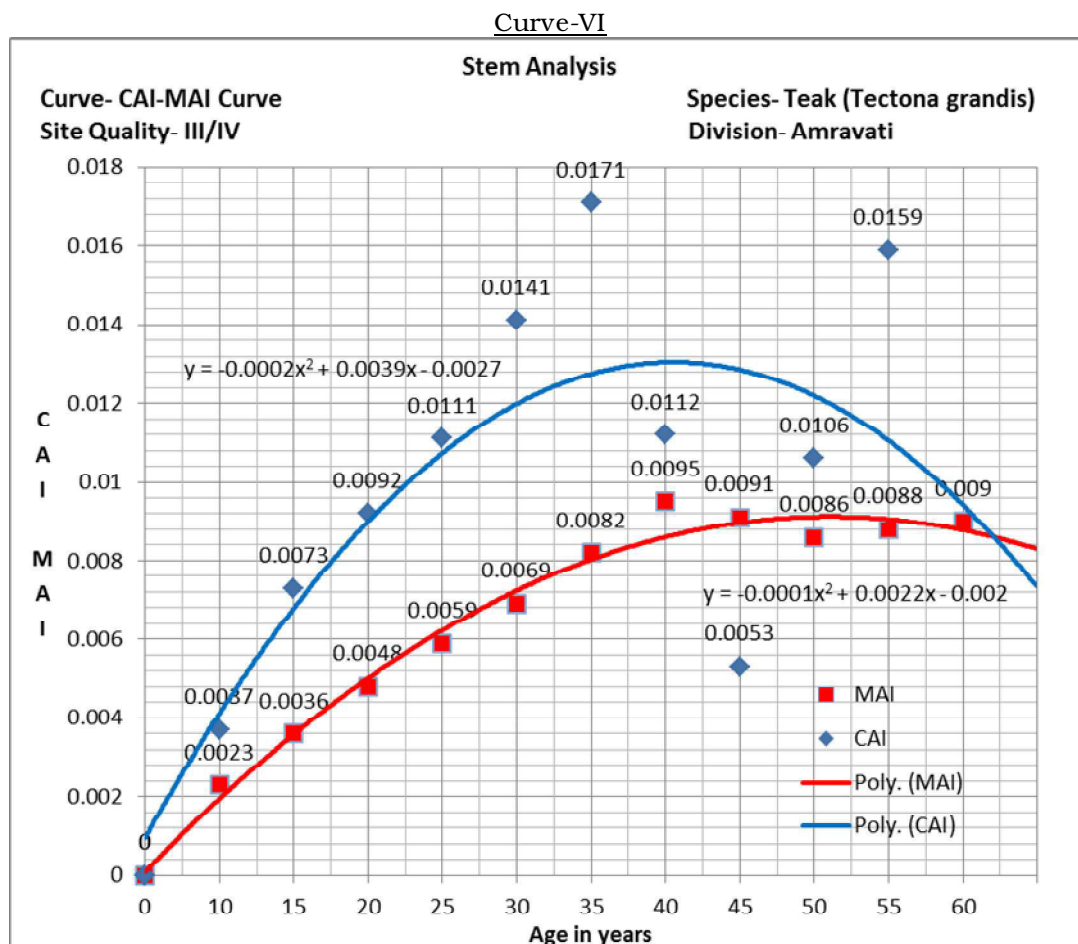
Age in years	Volume in Cum.
0	0.0000
10	0.0233
20	0.0967
30	0.2076
40	0.3785
50	0.4317
60	0.5378

Curve-V



Stem Analysis:  
**CAI/MAI Curves**  
**Species:Teak**  
**Site Quality :III/IV**

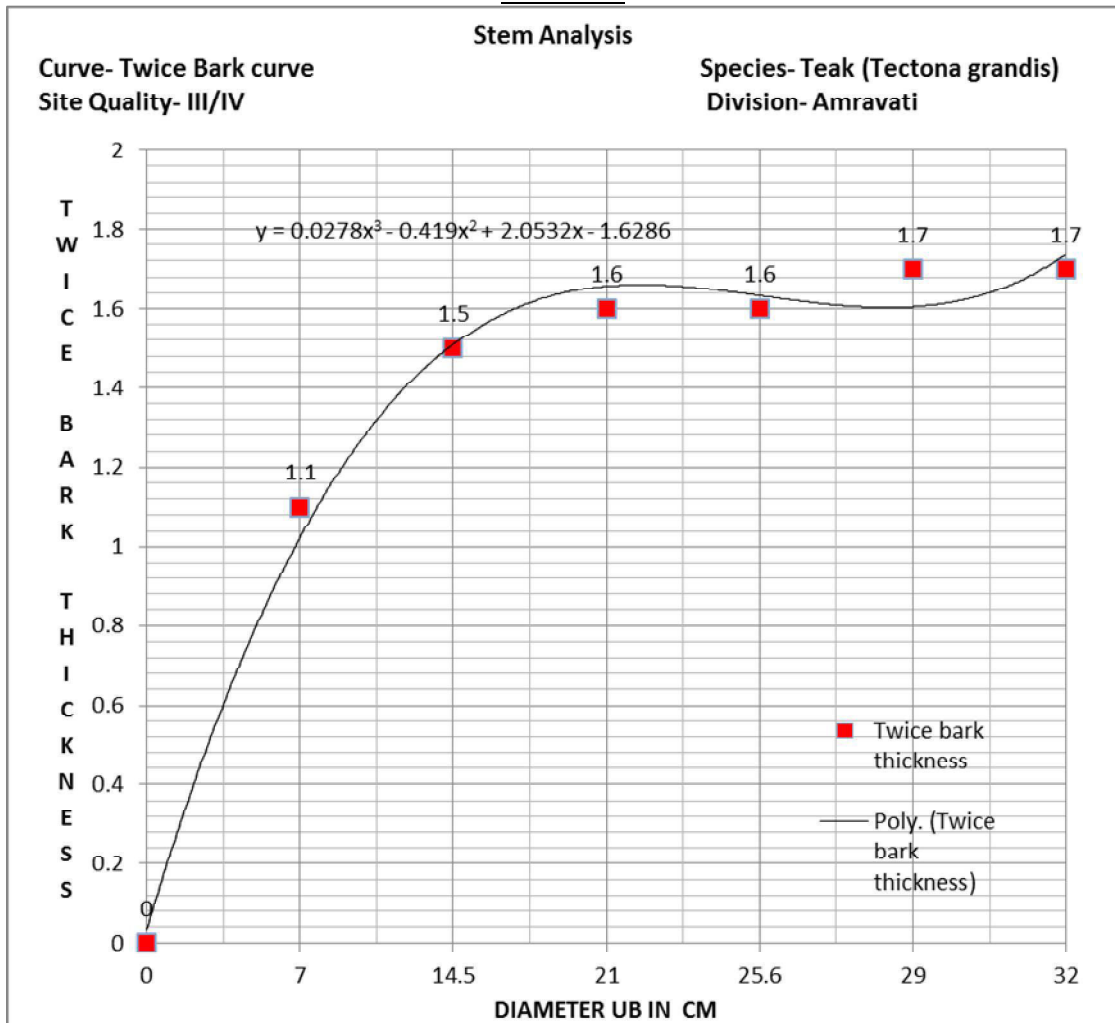
Age in years	MAI in cum.	CAI in cum.
0	0	0
10	0.0023	0.0037
15	0.0036	0.0073
20	0.0048	0.0092
25	0.0059	0.0111
30	0.0069	0.0141
35	0.0082	0.0171
40	0.0095	0.0112
45	0.0091	0.0053
50	0.0086	0.0106
55	0.0088	0.0159
60	0.0090	



Stem Analysis  
**Curve - Twice bark thickness- UB diameter**  
**Species :Teak (*Tectona grandis*)**  
**Site Quality:III/IV**  
**Division:Amravati**

Age in years	Diameter U.B. cm.	Twice Bark Thickness cm.	Diameter O.B. cm.
0	0	0	0
10	7.0	1.1	8.1
20	14.5	1.5	16.0
30	21.0	1.6	22.6
40	25.6	1.6	27.2
50	29.0	1.7	30.7
60	32.0	1.7	33.7

Curve-VII



6.1.1.3. GROWTH OF IMPORTANT MISCELLANEOUS SPECIES:-

(i) From Upadhyay's Working Plan :-

6.1.1.4. **The rate of growth for the important Miscellaneous species of coppice origin is as under.**

Table 6.1.

Age	Species wise Girth in cms						
	Khair	Saja	Dhaora	Salai	Lendia	Bija	Bhirra
02	15.24	20.57	11.43	15.24	13.20	11.43	12.70
03	17.78	22.86	14.47	19.05	18.03	12.70	13.71
04	23.87	23.36	19.30	21.84	18.28	14.47	15.24
05	22.88	24.43	20.82	23.62	21.08	15.24	16.00
06	17.78	22.40	22.86	24.13	22.60	16.25	16.76
07	25.90	26.67	23.36	25.14	23.87	17.53	17.52
08	27.43	27.68	24.63	25.90	24.63	18.28	17.78
09	28.19	28.44	25.14	25.90	25.90	19.81	18.28
10	30.22	30.22	25.90	26.67	26.67	20.57	19.81
11	31.49	30.98	25.40	29.71	27.68	21.59	22.86
12	32.51	33.02	26.41	32.57	28.44	22.86	25.90
13	34.03	35.56	27.43	34.03	29.21	24.38	27.17
14	35.30	38.35	27.94	35.81	30.48	25.14	28.44
15	35.81	38.60	28.44	37.84	31.49	26.16	30.73
16	36.83	39.87	29.21	39.37	32.51	27.17	31.75
17	38.10	41.14	70.22	41.40	33.02	27.94	32.76
18	38.60	42.67	30.73	42.41	33.52	28.70	27.94
19	39.87	43.18	31.24	45.72	34.79	29.46	33.52
20	40.64	43.94	32.25	47.75	35.56	30.48	34.29
21	41.91	45.21	33.02	48.26	36.57	31.24	35.30
22	43.43	45.72	34.29	49.27	37.33	32.25	36.06
23	43.94	46.99	34.79	51.30	38.35	33.02	36.83

(ii) From Vinod Kumar, R.S.Yadav and G.P.Garad's Working Plan :-

Result Of Stem Analysis :-

6.1.1.5. **The stem analysis was carried out during preparation of this working plan. The results of coppice Dhaoda and Babul for site quality III/IV and II/III are given as below :-**

Results of Stem Analysis

( b ) Dhawda (*Anogeissus latifolia*)

Species:- Dhawda (*Anogeissus latifolia*)

Site Quality:-III/IV

Division :- Amravati

CAI/MAI curves intersect at 103 years of age and corresponding dia (o.b.) at b.h. is 36.2 cm(Curve viii)and girth is 113.7cm. Hence harvestable girth recommended for Dhawda (*Anogeissus latifolia*) is 120 cm. at breast height.

Local Volume Table

Species :- Dhawda (*Anogeissus latifolia*)

Site Quality:- III / IV

Division :- Amravati

S.No.	Girth Class in cm.	Volume in cum.
1	15-30	0.001
2	30-45	0.004
3	45-60	0.085
4	60-75	0.155
5	75-90	0.240
6	90-105	0.375
7	105-120	0.520

## Stem Analysis

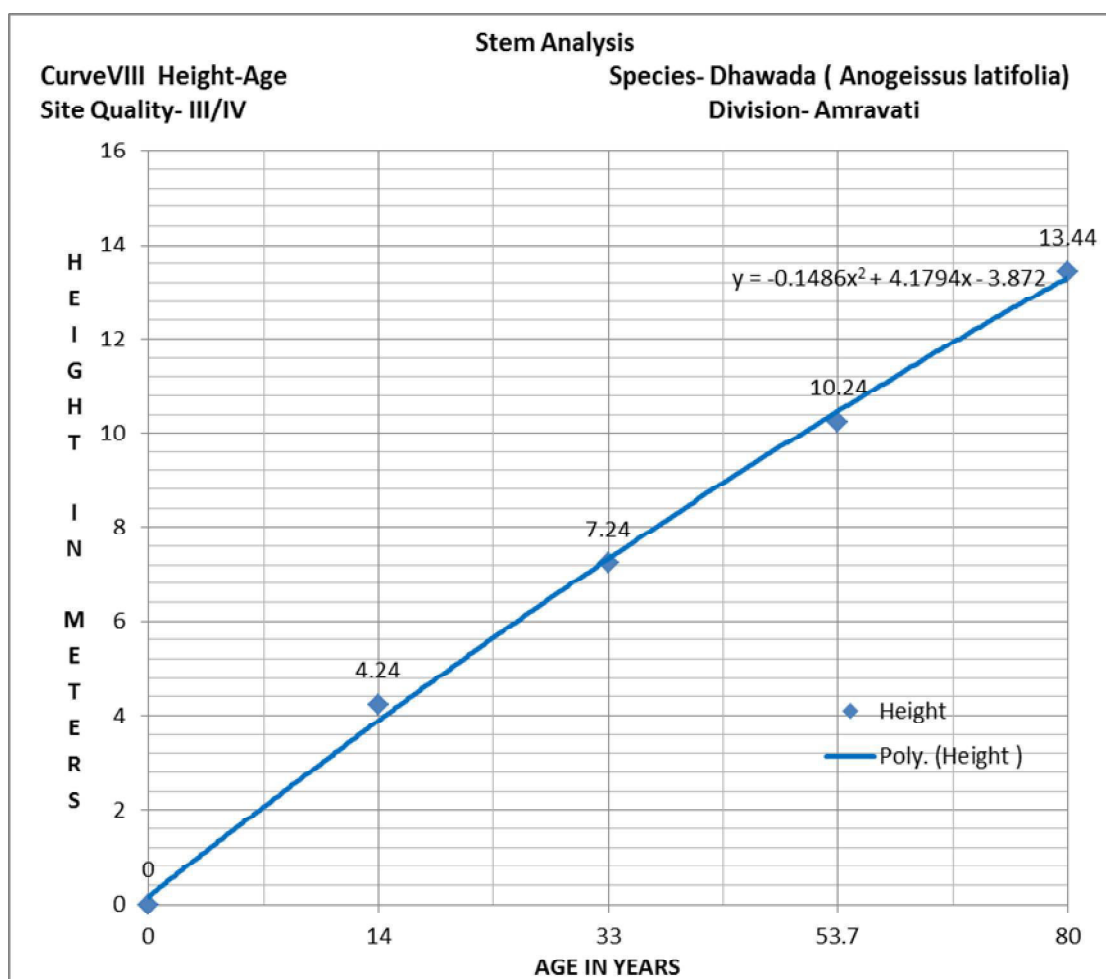
Curve VIII : (Height/Age)

**Species: Dhawda (*Anogeissus latifolia*)**

Site Quality: III / IV

Division :Amravati

Age	ht.of section in m.
0	0
14	4.24
33	7.24
53.7	10.24
80	13.44



Stem analysis

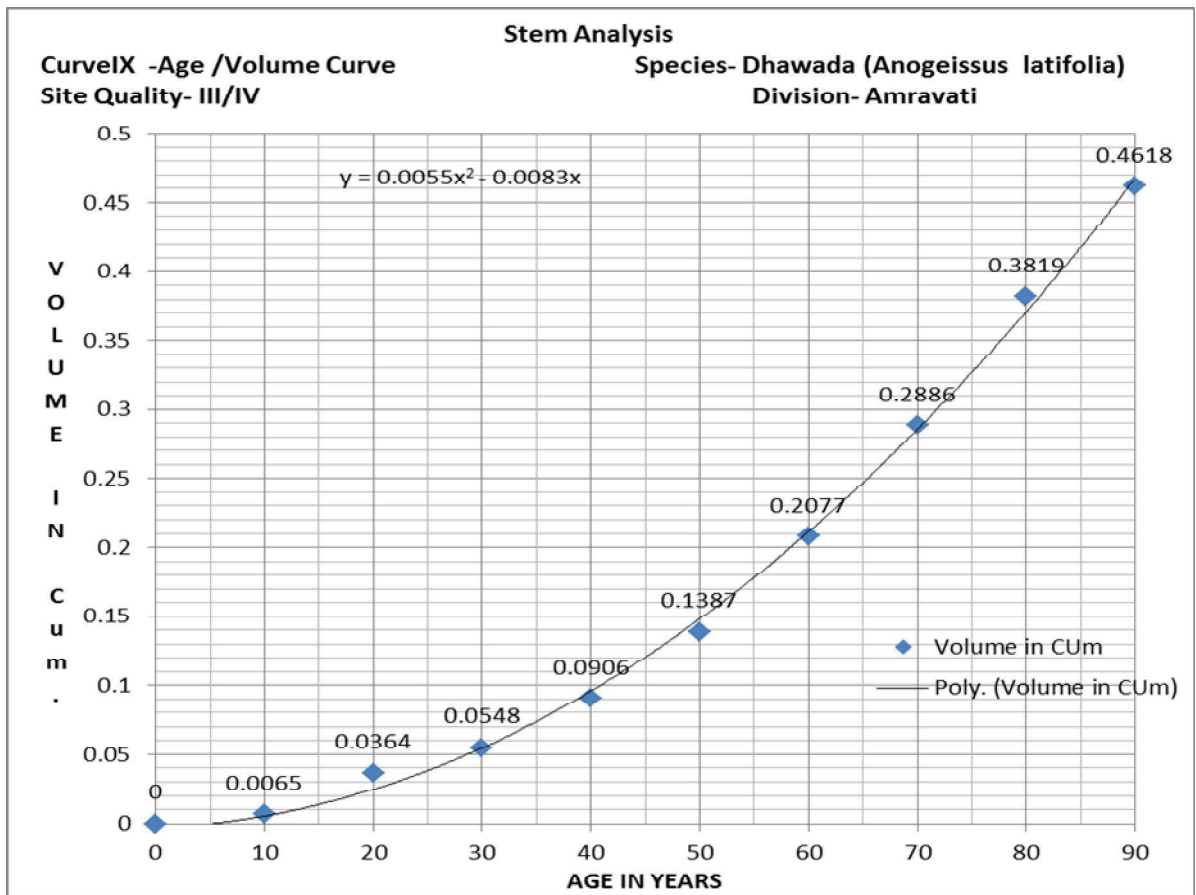
Curve IX :- Age/Volume Curve

**Species : Dhawda (*Anogeissus latifolia*)**

Site Quality : III / IV

Division: Amravati

Age in years	Volume in Cum.
0	0
10	0.0065
20	0.0364
30	0.0548
40	0.0906
50	0.1387
60	0.2077
70	0.2886
80	0.3819
90	0.4618



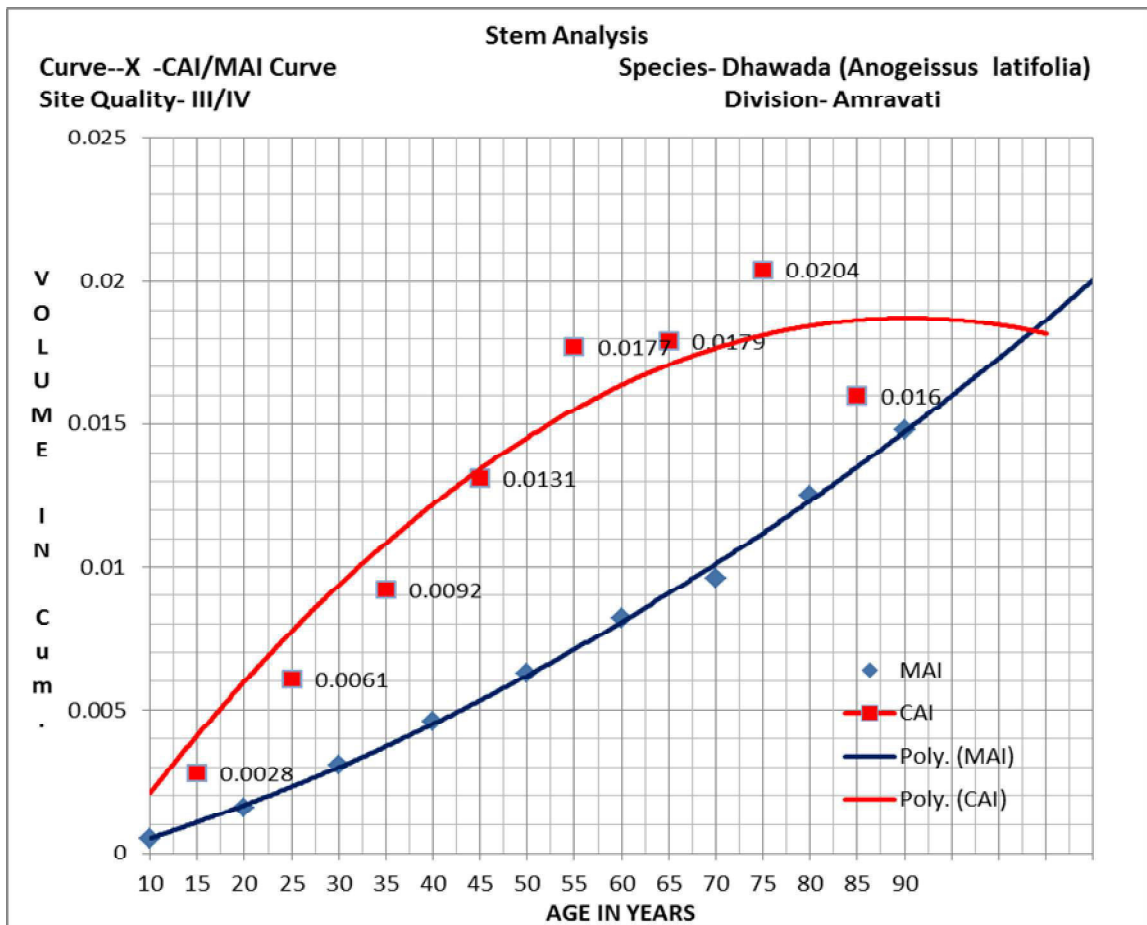
Stem Analysis  
Curves- X CAI/MAI

**Species: Dhawda (*Anogeissus latifolia*)**

Site Quality : III / IV

Division: Amravati

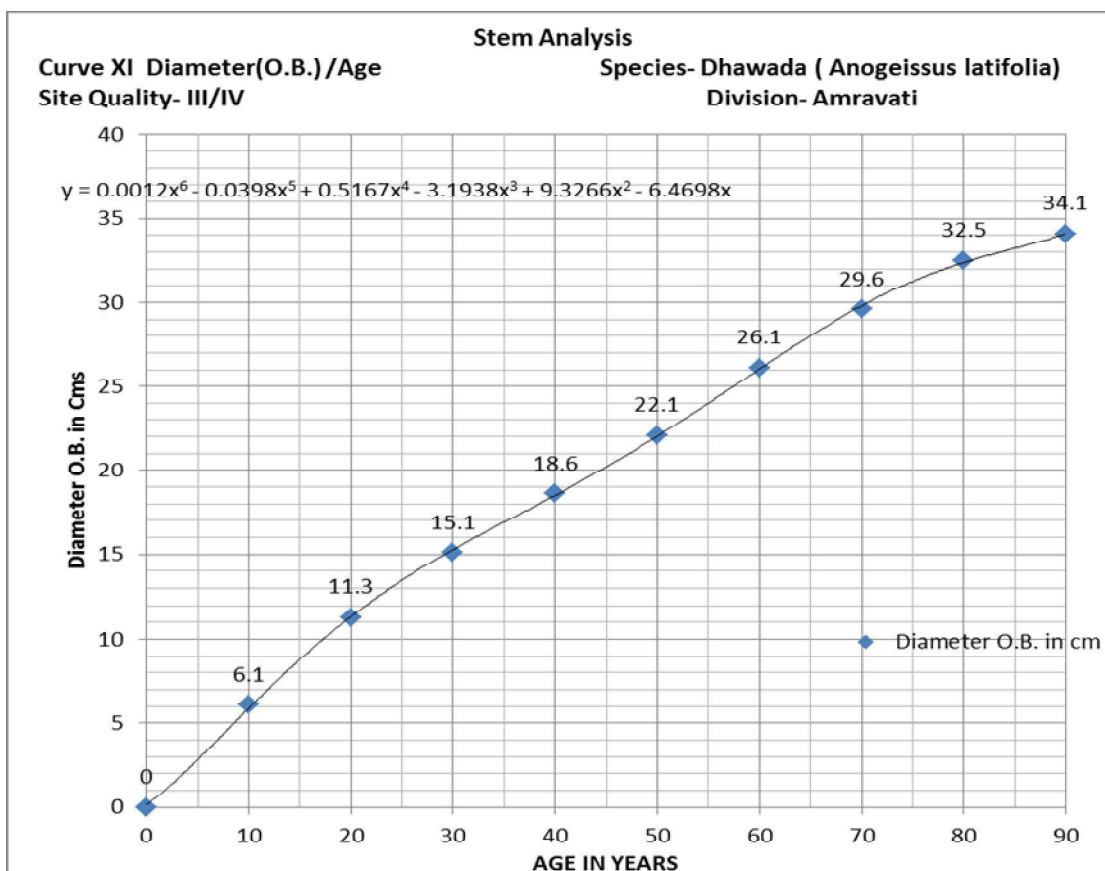
Age in years	MAI in cum.	Age in years	CAI in cum.
0	0	0	0
10	0.0005	15	0.0028
20	0.0016	25	0.0061
30	0.0031	35	0.0092
40	0.0046	45	0.0131
50	0.0063	55	0.0177
60	0.0082	65	0.0179
70	0.0096	75	0.0204
80	0.0125	85	0.016
90	0.0148		



Stem Analysis  
 Curve - XI :Diameter O.B./Age  
 Species :Dhawda (*Anogeissus latifolia*)  
 Site Quality:III/IV

Division:Amravati

Age in years	Diameter U.B. cm.	2x B. T. cm.	Dia. O.B. cm.
0	0	0	0
10	5.4	0.7	6.1
20	10.2	1.1	11.3
30	13.9	1.2	15.1
40	17.3	1.3	18.6
50	20.8	1.3	22.1
60	24.8	1.3	26.1
70	28.3	1.3	29.6
80	31.2	1.3	32.5
90	32.8	1.3	34.1



Results of Stem Analysis

( c ) Babul (*Acacia nilotica*)

Species:- Babul (*Acacia nilotica*)

Site Quality:- II / III

Division :- Amravati

**CAI/MAI curves intersect at 33 years of age and corresponding dia (o.b.)at b.h.is 34.5cm (Curve viii) and girth is 108 cm. Hence harvestable girth ( at breast height), recommended for Babul (*Acacia nilotica*) is 105 cm.**

Local Volume Table

Species:- Babul (*Acacia nilotica*)

Site Quality:- II / III

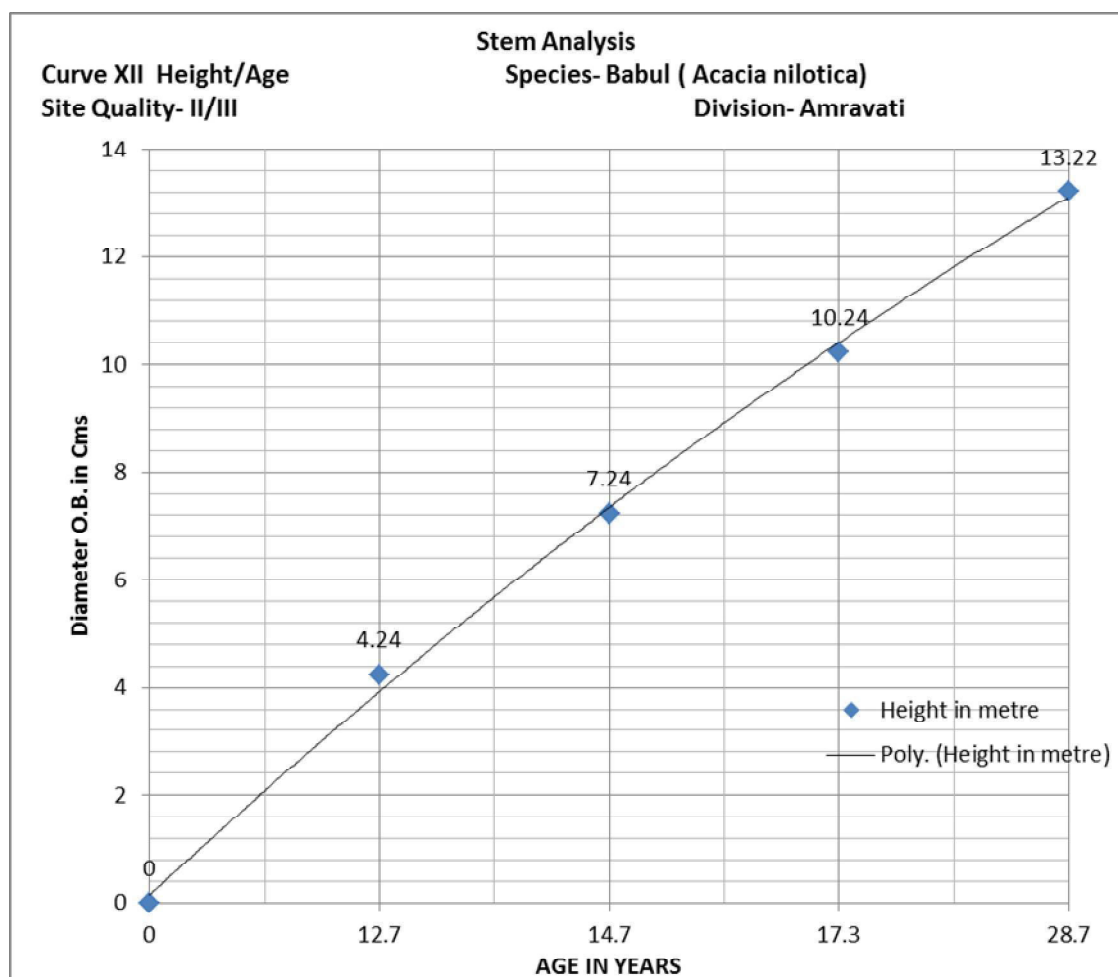
Division :- Amravati

S.No.	Girth Class in cm.	Volume in cum.
1	15-30	0.0001
2	30-45	0.003
3	45-60	0.085
4	60-75	0.165
5	75-90	0.300
6	90-105	0.450
7	105-120	0.535

Stem Analysis  
 Curve XII - (Height /Age)  
 Species: Babul (*Acacia nilotica*)

Site Quality: II/III    Division : Amravati

Age in years	ht.of section in m.
0	0
12.7	4.24
14.7	7.24
17.3	10.24
28.7	13.22



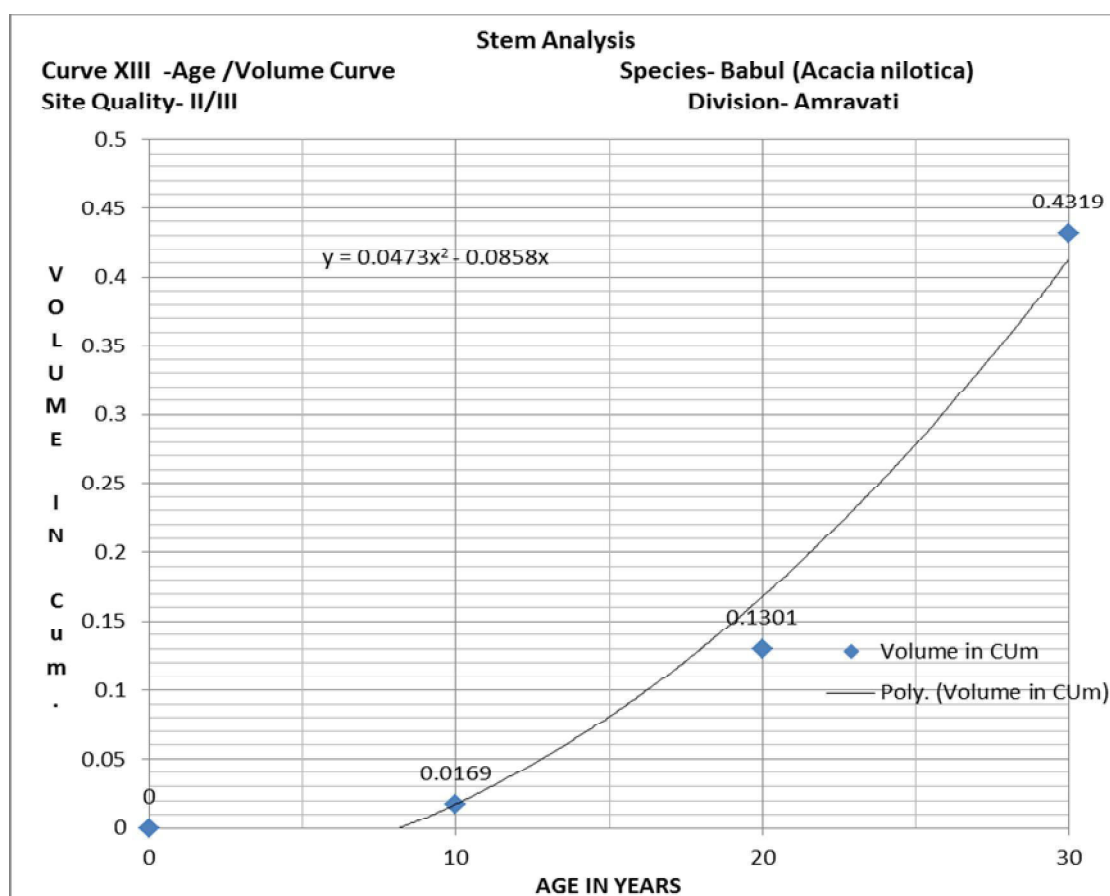
Stem analysis  
Curve XIII :- Age/Volume Curve

**Species : Babul (*Acacia nilotica*)**

**Site Quality :II/III**

**Division: Amravati**

Age in years	Volume in Cum.
0	0
10	0.0169
20	0.1301
30	0.4319



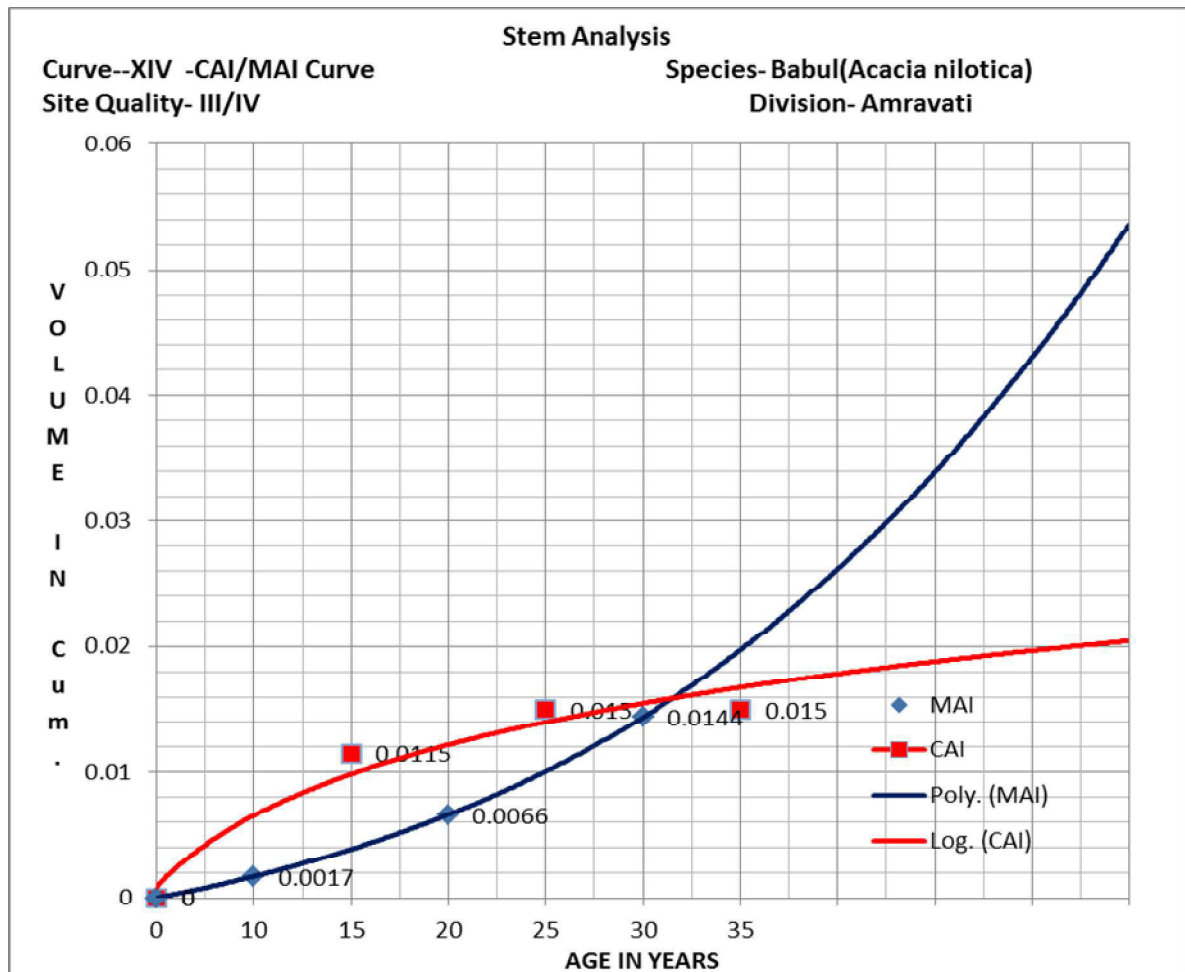
## Stem Analysis

Curves- XIV CAI/MAI  
**Species: Babul (*Acacia nilotica*)**

**Site Quality :III/IV**

**Division: Amravati**

Age in years	MAI in cum.	Age in years	CAI in cum.
0	0	0	0
10	0.0017	15	0.0115
20	0.0066	25	0.015
30	0.0144	25	0.015

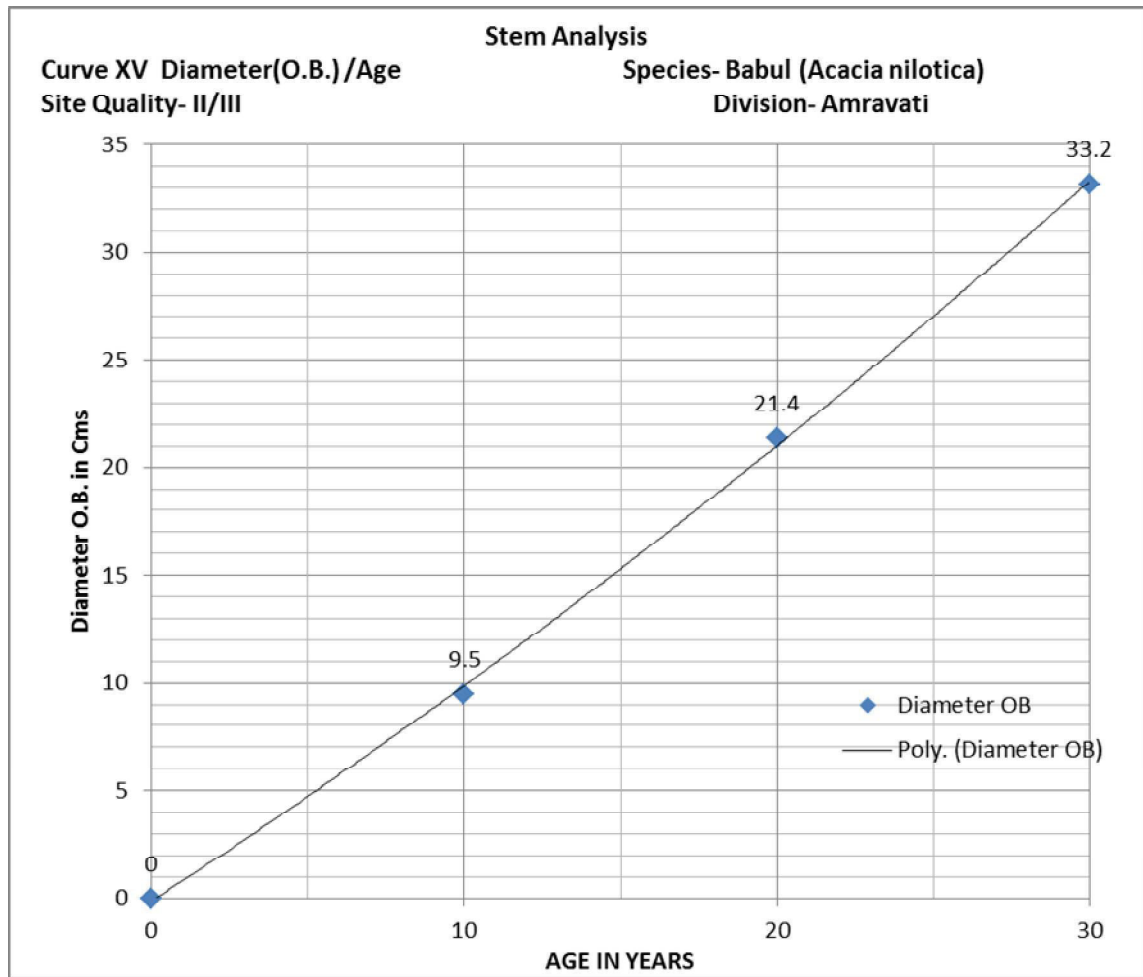


Stem Analysis  
 Curve XV :Diameter O.B./Age  
**Species :Babul (*Acacia nilotica*)**

Site Quality:II/III

Division:Amravati

Age in years	Diameter U.B. cm.	Twice Bark Thickness cm.	Diameter O.B. cm.
0	0	0	0
10	8.7	0.8	9.5
20	20.2	1.2	21.4
30	30.7	2.5	33.2



SECTION : 6.2. : Stocking –

6.2.1.1. As observed in Vinod Kumar, R.S.Yadav and G.P.Garad's Working Plan enumeration was carried out with the existing staff in the year 2001-02 for the areas earlier covered under Coppice with reserve working circle and Improvement working circle. Sampling intensity was 1.3% total population area is 12037.609 ha. and sample area is 157.32 ha.

Table 6.2.

Girth Class	Teak per ha.	Non-Teak per ha.	No. of Trees per ha.
<b>15-30</b>	<b>46.37</b>	<b>65.19</b>	111.56
<b>31-45</b>	<b>29.43</b>	<b>46.75</b>	76.18
<b>46-60</b>	<b>11.92</b>	<b>23.05</b>	34.97
<b>61-75</b>	<b>6.29</b>	<b>16.44</b>	22.73
<b>76-90</b>	<b>2.58</b>	<b>8.83</b>	11.41
<b>91-105</b>	<b>1.13</b>	<b>3.32</b>	4.45
<b>106-120</b>	<b>0.35</b>	<b>1.65</b>	2.00
<b>121-135</b>	<b>0.09</b>	<b>0.66</b>	0.75
<b>136 &amp; above</b>	<b>0.06</b>	<b>0.48</b>	0.54
Total	98.22	167.36	265.58
Percentage	37.00	63.00	100.00

CURRENT PLAN :-

6.2.1.2. Enumerations were carried out during 2010-11 by Forest Resources Survey Scheme Unit, Amravati. Object of the survey was to assess the total growing stock of all the species. The statistical sampling method was used for tree enumeration. The plot size of 60x60 mt. was found suitable with the least standard error. All the species were enumerated separately in 15 cms girth classes down to 15 cm g.b.h. Results were computed for each working circle. The extract from the note on the enumeration and its results by Chief Statistician, Nagpur is given below:-

Tree Enumeration :-

The areas covered by resources survey in the various working circles of Vinod Kumar, R.S.Yadav and G.P.Garad's Working Plan is as follows :-

Table 6.2.

Sr. No.	Name of Working Circle	Area covered Ha.	Sample Area Ha.	Sampling Intensity	Std. Error
<b>1.</b>	<b>Selection Cum Improvement WC</b>	<b>15097</b>	<b>152.6</b>	<b>1.01</b>	<b>4.4%</b>
<b>2.</b>	<b>Afforestation WC</b>	<b>27386</b>	<b>253.8</b>	<b>0.93</b>	<b>4.3%</b>
<b>3.</b>	<b>Kuran WC</b>	<b>7451</b>	<b>72.0</b>	<b>0.97</b>	<b>5.6%</b>

The voluminous data was analysed by Statistician and estimates of growing stock of various species according to girth class were obtained for each working circle. The estimates of each individual important species and remaining species grouped together are given in Appendix No. XXXIV.

Table 6.3.  
Growing stock comparison of Selection Cum Improvement working circle.  
Numbers of Tress per Ha.

Girth Class	Last Working Plan 2001-02			Current Enumeration 2010-11		
	Teak	Misc.	Total	Teak	Misc.	Total
<b>15-30</b>	<b>46.37</b>	<b>65.19</b>	111.56	<b>23.00</b>	<b>61.04</b>	84.04
<b>31-45</b>	<b>29.43</b>	<b>46.75</b>	76.18	<b>22.28</b>	<b>45.25</b>	67.53
<b>46-60</b>	<b>11.92</b>	<b>23.05</b>	34.97	<b>14.49</b>	<b>32.08</b>	46.57
<b>61-75</b>	<b>6.29</b>	<b>16.44</b>	22.73	<b>8.45</b>	<b>19.07</b>	27.52
<b>76-90</b>	<b>2.58</b>	<b>8.83</b>	11.41	<b>5.39</b>	<b>9.96</b>	15.35
<b>91-105</b>	<b>1.13</b>	<b>3.32</b>	4.45	<b>1.85</b>	<b>4.40</b>	6.25
<b>106-120</b>	<b>0.35</b>	<b>1.65</b>	2.00	<b>0.91</b>	<b>1.68</b>	2.59
<b>121-135</b>	<b>0.09</b>	<b>0.66</b>	0.75	<b>0.24</b>	<b>0.72</b>	0.96
<b>136 &amp; above</b>	<b>0.06</b>	<b>0.48</b>	0.54	<b>0.17</b>	<b>0.58</b>	0.75
Total	98.22	167.36	265.58	76.78	174.78	251.56
Percentage	37.00	63.00	100.00	30.53	69.47	100.00

6.2.1.3. From current enumeration it is found that in SCI working circle 252 trees per ha. exists. The species of general utility forms 33% of the stock. The most predominant species being Teak i.e. 30.5%. other than Teak, Dhawada, Bhirra, Salai and Khair are stocked little better.

6.2.1.4. There are nine felling series of SCI working circle viz. Linga and Shekadari in Warud range, Lakhara in Morshi range, Wishroli in Paratwada range, Wadhona, Pohara, North Chirodi and South Chirodi in old Amravati range. The enumeration data showing growing stock of Teak and Non-Teak species for the year 2001-02 and 2010-11 are available for six felling series and whereas for remaining three felling series only 2010-11 data of enumeration is available. Table abstract showing comparison of per ha. trees for different felling series is as follows :-

Table 6.4.

Sr. No.	Name of Felling Series	2001-02			2010-11		
		Teak	Non-Teak	Total	Teak	Non-Teak	Total
<b>1</b>	<b>Linga</b>	<b>101</b>	<b>197</b>	298	<b>157</b>	<b>163</b>	320
<b>2</b>	<b>Wai</b>	<b>104</b>	<b>141</b>	245	<b>143</b>	<b>235</b>	378
<b>3</b>	<b>Shekdari</b>	<b>131</b>	<b>119</b>	250	<b>137</b>	<b>214</b>	351
<b>4</b>	<b>Lakhara</b>	<b>135</b>	<b>341</b>	476	<b>72</b>	<b>257</b>	329
<b>5</b>	<b>Wishroli</b>	<b>157</b>	<b>297</b>	454	<b>75</b>	<b>70</b>	145
<b>6</b>	<b>North Chirodi</b>	<b>47.47</b>	148	195	<b>23</b>	<b>123</b>	146
<b>7</b>	<b>South Chirodi</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>4</b>	<b>62</b>	66
<b>8</b>	<b>Pohara</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>33</b>	<b>113</b>	146
<b>9</b>	<b>Wadhona</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>49</b>	<b>111</b>	160

Felling Series at Sr.no.5 to Sr.No.9 shows that in current enumeration there are minimum 66 trees to maximum 160 trees. The weighted average of no. of trees for these three felling series is 128.00 stocking is available per ha. which is far below than the normal stocking of the natural forests i.e. areas are under stocked, meaning thereby these areas needs to be regenerated artificially.

Now considering the enumeration data of first 4 felling series i.e. Linga, Wai, Shekdari and Lakhara no. of trees per ha. in year 2001-02 are 298, 245, 250 and 476, where in year 2010-11 it is 320, 378, 351, 329 respectively. Except Lakhara no. of trees per ha. shows increase, whereas in Lakhara felling series though no. of trees per ha. declined in year 2010-11, but the number i.e. 329 trees per ha. is comparable to no. of trees per ha. available in other three felling series for year 2010-11.

6.2.1.5. The girth class wise comparison of the 4 felling series is as follows:-

Table 6.5.

Warud Range - Linga Felling Series

Girth Class	2001-02			2010-11		
	Teak	Non-Teak	Total	Teak	Non-Teak	Total
<b>16-30</b>	<b>41.1</b>	<b>57.2</b>	98.30	<b>60.67</b>	<b>61.88</b>	122.55
<b>31-45</b>	<b>27.12</b>	<b>57.72</b>	84.84	<b>33.19</b>	<b>40.56</b>	73.75
<b>46-60</b>	<b>16.29</b>	<b>36.3</b>	52.59	<b>30.85</b>	<b>28.15</b>	59
<b>61-75</b>	<b>9.93</b>	<b>25.99</b>	35.92	<b>17.17</b>	<b>18.25</b>	35.42
<b>76-90</b>	<b>4.61</b>	<b>12.29</b>	16.90	<b>10.55</b>	<b>11.03</b>	21.58
<b>91-105</b>	<b>1.51</b>	<b>4.19</b>	5.70	<b>2.66</b>	<b>2.73</b>	5.39
<b>106-120</b>	<b>0.28</b>	<b>1.55</b>	1.83	<b>1.24</b>	<b>0.63</b>	1.87
<b>121-135</b>	<b>0.09</b>	<b>0.47</b>	0.56	<b>0.28</b>	<b>0.07</b>	0.35
<b>136-150</b>	<b>0.19</b>	<b>1.13</b>	1.32	<b>0.12</b>	<b>0</b>	0.12
<b>150above</b>	<b>0</b>	<b>0</b>	0.00	<b>0.07</b>	<b>0.05</b>	0.12
Total	101.12	196.84	297.96	156.80	163.35	320.15

Table 6.6.

Warud Range - Wai Felling Series

Girth Class	2001-02			2010-11		
	Teak	Non-Teak	Total	Teak	Non-Teak	Total
<b>16-30</b>	<b>52.82</b>	<b>48.82</b>	101.64	<b>40.67</b>	<b>84.20</b>	124.87
<b>31-45</b>	<b>28.15</b>	<b>43.38</b>	71.53	<b>41.21</b>	<b>53.62</b>	94.83
<b>46-60</b>	<b>12.46</b>	<b>21</b>	33.46	<b>29.59</b>	<b>44.00</b>	73.59
<b>61-75</b>	<b>7.27</b>	<b>14.79</b>	22.06	<b>15.89</b>	<b>28.01</b>	43.9
<b>76-90</b>	<b>2.37</b>	<b>7.6</b>	9.97	<b>8.23</b>	<b>15.74</b>	23.97
<b>91-105</b>	<b>0.74</b>	<b>3.31</b>	4.05	<b>3.48</b>	<b>5.20</b>	8.68
<b>106-120</b>	<b>0.2</b>	<b>1.55</b>	1.75	<b>1.65</b>	<b>2.48</b>	4.13
<b>121-135</b>	<b>0</b>	<b>0.29</b>	0.29	<b>1.63</b>	<b>1.11</b>	2.74
<b>136-150</b>	<b>0.04</b>	<b>0.45</b>	0.49	<b>0.64</b>	<b>0.57</b>	1.21
<b>150above</b>	<b>0</b>	<b>0</b>	0.00	<b>0.23</b>	<b>0.19</b>	0.42
Total	104.05	141.19	245.24	143.22	235.12	378.34

Table 6.7.

## Warud Range – Shekdari Felling Series

Gith Class	2001-02			2010-11		
	Teak	Non-Teak	Total	Teak	Non-Teak	Total
<b>16-30</b>	<b>53.13</b>	<b>33.99</b>	87.12	<b>35.12</b>	<b>65.08</b>	100.2
<b>31-45</b>	<b>42.47</b>	<b>31.63</b>	74.10	<b>35.19</b>	<b>49.86</b>	85.05
<b>46-60</b>	<b>18.26</b>	<b>18.16</b>	36.42	<b>22.84</b>	<b>37.04</b>	59.88
<b>61-75</b>	<b>10.35</b>	<b>15.9</b>	26.25	<b>19.22</b>	<b>27.09</b>	46.31
<b>76-90</b>	<b>4.2</b>	<b>11.01</b>	15.21	<b>15.31</b>	<b>18.25</b>	33.56
<b>91-105</b>	<b>1.67</b>	<b>5.45</b>	7.12	<b>6.4</b>	<b>9.29</b>	15.69
<b>106-120</b>	<b>0.45</b>	<b>1.98</b>	2.43	<b>2.27</b>	<b>4.61</b>	6.88
<b>121-135</b>	<b>0.14</b>	<b>0.9</b>	1.04	<b>0.36</b>	<b>2.34</b>	2.7
<b>136-150</b>	<b>0</b>	<b>0.56</b>	0.56	<b>0.2</b>	<b>0.76</b>	0.96
<b>150above</b>	<b>0</b>	<b>0</b>	0.00	<b>0</b>	<b>0.00</b>	0
Total	130.67	119.58	250.25	136.91	214.32	351.23

Table 6.8.

## Morshi Range - Lakhara Felling Series

Gith Class	2001-02			2010-11		
	Teak	Non-Teak	Total	Teak	Non-Teak	Total
<b>16-30</b>	<b>67.49</b>	<b>122.35</b>	189.84	<b>22.13</b>	<b>75.08</b>	97.21
<b>31-45</b>	<b>40.59</b>	<b>105.56</b>	146.15	<b>25.13</b>	<b>82.39</b>	107.52
<b>46-60</b>	<b>16.54</b>	<b>60.42</b>	76.96	<b>13.01</b>	<b>53.72</b>	66.73
<b>61-75</b>	<b>6.44</b>	<b>30.05</b>	36.49	<b>5.51</b>	<b>27.04</b>	32.55
<b>76-90</b>	<b>2.65</b>	<b>13.32</b>	15.97	<b>3.88</b>	<b>10.42</b>	14.3
<b>91-105</b>	<b>1.52</b>	<b>6.38</b>	7.90	<b>1.24</b>	<b>4.84</b>	6.08
<b>106-120</b>	<b>0.25</b>	<b>2.02</b>	2.27	<b>0.93</b>	<b>2.30</b>	3.23
<b>121-135</b>	<b>0</b>	<b>0.38</b>	0.38	<b>0</b>	<b>0.93</b>	0.93
<b>136-150</b>	<b>0</b>	<b>0.38</b>	0.38	<b>0</b>	<b>0.46</b>	0.46
<b>150above</b>	<b>0</b>	<b>0</b>	0.00	<b>0</b>	<b>0.23</b>	0.23
Total	135.48	340.86	476.34	71.83	257.41	329.24

The above data shows that the nos. of trees specifically in higher girth class i.e. from 61-75 is showing increasing trend. Therefore it appears that the treatment carried out in these areas resulted in increase in growing stock.

6.2.1.6. Afforestation Working Circle - **Enumerated number of trees per ha. are as below:-**

Table 6.9.

Estimated Growing Stock: No. of sound trees per hectare

Working Circle : A W C  
Period of Enumeration : 2010-11

Division : Amravati

Population area (ha): 27386.06  
Sample area (ha): 253.8  
Intensity of sampling (%): 0.927

Group/ Species	Girth classwise classification in cms										Total
	15U30	30U45	45U60	60U75	75U90	90U105	105U120	120U135	135U150	150 and above	
Group A :- Species of General Utility											
<b>Ain</b>	0.524	0.307	0.146	0.047	0.028	0.004	0.004	0.004	0.004	0.000	1.068
<b>Lendia</b>	0.095	0.099	0.047	0.051	0.043	0.024	0.024	0.004	0.000	0.000	0.387
<b>Teak</b>	2.301	2.029	0.883	0.177	0.055	0.008	0.008	0.004	0.004	0.004	5.473
<b>Tiwas</b>	0.008	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
<b>Total</b>	2.928	2.439	1.076	0.275	0.126	0.036	0.036	0.012	0.008	0.004	6.940
Group B :- Species of Special Utility											
<b>Bherra</b>	2.415	2.053	1.040	0.500	0.331	0.142	0.051	0.043	0.028	0.020	6.623
<b>Dhawada</b>	0.536	0.221	0.106	0.008	0.004	0.000	0.004	0.000	0.000	0.000	0.879
<b>Hiwar</b>	4.240	4.113	2.482	0.816	0.366	0.099	0.028	0.004	0.004	0.004	12.156
<b>Kalamb</b>	0.008	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.012
<b>Khair</b>	2.270	1.111	0.351	0.102	0.051	0.004	0.000	0.000	0.000	0.000	3.889
<b>Moin</b>	0.059	0.063	0.032	0.043	0.024	0.000	0.016	0.004	0.000	0.000	0.241
<b>Salai</b>	0.051	0.051	0.079	0.150	0.327	0.177	0.134	0.071	0.079	0.032	1.151
<b>Total</b>	9.579	7.612	4.090	1.619	1.103	0.426	0.233	0.122	0.111	0.056	24.951
Group C :- Species of Minor Forest Produce - (Apta, Awla, Behada, Bel Biba, Chandan, Char, Chinch, Kawath, Moha, Nilgiri, Palas, Shiras, Sitafal, Tendu, etc.)											
<b>Total</b>	21.335	12.212	6.104	1.926	0.737	0.233	0.107	0.032	0.020	0.067	42.773
Group D :- Other Species											
<b>Total</b>	7.361	4.058	2.061	1.215	0.861	0.388	0.230	0.210	0.083	0.147	16.614
<b>Grand Total</b>	41.203	26.321	13.331	5.035	2.827	1.083	0.606	0.376	0.222	0.274	91.278

6.2.1.7. Kuran Working Circle - **Enumerated number of trees per ha. are as below:-**

Estimated Growing Stock: No. of sound trees per hectare

Working Circle : KWC  
Period of Enumeration : 2010-11

Division : Amravati

Population area (ha): 7451.23  
Sample area (ha): 72  
Intensity of sampling (%): 0.966

Group/ Species	Girth classwise classification in cms										Total
	15U30	30U45	45U60	60U75	75U90	90U105	105U120	120U135	135U150	150 and above	
Group A :- Species of General Utility											
<b>Ain</b>	0.194	0.139	0.167	0.014	0.028	0.014	0.000	0.000	0.000	0.000	0.556
<b>Bija</b>	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
<b>Lendia</b>	0.222	0.097	0.028	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.361
<b>Teak</b>	0.889	1.306	1.056	0.500	0.278	0.139	0.111	0.014	0.014	0.000	4.307
<b>Tiwas</b>	0.167	0.097	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.292
<b>Total</b>	1.472	1.653	1.279	0.528	0.306	0.153	0.111	0.014	0.014	0.000	5.530
Group B :- Species of Special Utility											
<b>Bherra</b>	0.681	0.819	0.556	0.792	0.694	0.222	0.111	0.028	0.014	0.000	3.917
<b>Dhawada</b>	1.181	0.667	0.278	0.111	0.028	0.028	0.000	0.000	0.000	0.000	2.293
<b>Hiwar</b>	5.236	3.806	2.611	0.611	0.222	0.056	0.000	0.000	0.000	0.000	12.542
<b>Khair</b>	11.208	7.417	2.514	0.472	0.097	0.069	0.014	0.000	0.000	0.000	21.791
<b>Moin</b>	0.111	0.250	0.333	0.486	0.222	0.056	0.014	0.000	0.000	0.000	1.472
<b>Salai</b>	0.014	0.389	1.056	2.000	1.431	0.667	0.153	0.056	0.014	0.000	5.780
<b>Shivan</b>	0.014	0.000	0.014	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.042
<b>Total</b>	18.445	13.348	7.362	4.472	2.708	1.098	0.292	0.084	0.028	0.000	47.837
Group C :- Species of Minor Forest Produce - (Amba, Apta, Awla, Behada, Bel Biba, Chandan, Char, Chinch, Kawath, Moha, Nilgiri, Palas, Shiras, Sitafal, Tendu, etc.)											
<b>Total</b>	26.931	14.238	6.723	3.709	1.279	0.723	0.195	0.125	0.000	0.042	53.965
Group D :- Other Species											
<b>Total</b>	8.588	4.780	2.390	0.960	0.419	0.140	0.098	0.028	0.014	0.028	17.445
<b>Grand Total</b>	55.436	34.019	17.754	9.669	4.712	2.114	0.696	0.251	0.056	0.070	124.777

6.2.1.8. Miscellaneous Working Circle – **Enumerated number of trees per ha. are as below:-**

Estimated Growing Stock: No. of sound trees per hectare

Working Circle : MISC WC  
Period of Enumeration : 2010-11

Division : Amravati

Population area (ha): 1565.36  
Sample area (ha): 12.6  
Intensity of sampling (%): 0.805

Group/ Species	Girth classwise classification in cms										
	15U30	30U45	45U60	60U75	75U90	90U105	105U120	120U135	135U150	150 and above	Total
Group A :- Species of General Utility											
<b>Ain</b>	<b>0.158</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.158</b>
<b>Lendia</b>	<b>0.476</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.476</b>
<b>Teak</b>	<b>0.079</b>	<b>0.635</b>	<b>0.476</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>1.190</b>
Total	0.713	0.635	0.476	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.824
Group B :- Species of Special Utility											
<b>Bherra</b>	<b>1.746</b>	<b>0.873</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>2.619</b>
<b>Hiwar</b>	<b>0.238</b>	<b>0.476</b>	<b>0.158</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.872</b>
<b>Khair</b>	<b>1.111</b>	<b>0.952</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>2.063</b>
<b>Moin</b>	<b>0.238</b>	<b>0.238</b>	<b>0.397</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.397</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>1.270</b>
Total	3.333	2.539	0.555	0.000	0.000	0.000	0.397	0.000	0.000	0.000	6.824
Group C :- Species of Minor Forest Produce - (Palas, Sitafal etc.)											
Total	1.905	1.349	0.556	0.952	0.476	0.000	0.158	0.000	0.000	0.000	5.396
Group D :- Other Species											
Total	5.317	3.333	1.665	0.079	0.000	0.000	0.000	0.000	0.079	0.000	10.473
Grand Total	11.268	7.856	3.252	1.031	0.476	0.000	0.555	0.000	0.079	0.000	24.517

6.3. STATUS OF NATURAL REGENERATION –

6.3.1.1. Enumeration data collected by FRSS during the year 2010-11 of Amravati Forest Division. Total of 1364 plots comprising area of 54.56 ha. is enumerated. Enumeration data reveals that 349 seedlings per ha. of natural regeneration are available.

6.4. EXISTING GROWING STOCK :-

6.4.1.1. Growing stock of Teak is given below, for all the felling series of SCI and 4 felling series (Linga, Wai, Lakhara, Shekdari) is as below.

Table 6.10.

Girth Class	SCI Working Circle		4 Felling Series	
	2001-02		2010-11	
	Teak	Cubic mtr.	Teak	Cubic mtr.
<b>16-30</b>	<b>48.97</b>	<b>0.54</b>	<b>39.65</b>	<b>0.44</b>
<b>31-45</b>	<b>31.50</b>	<b>1.67</b>	<b>33.68</b>	<b>1.79</b>
<b>46-60</b>	<b>13.84</b>	<b>1.94</b>	<b>24.07</b>	<b>3.37</b>
<b>61-75</b>	<b>7.15</b>	<b>1.64</b>	<b>14.45</b>	<b>3.32</b>
<b>76-90</b>	<b>2.87</b>	<b>1.02</b>	<b>9.49</b>	<b>3.37</b>
<b>91-105</b>	<b>1.17</b>	<b>0.65</b>	<b>3.45</b>	<b>1.91</b>
<b>106-120</b>	<b>0.40</b>	<b>0.33</b>	<b>1.52</b>	<b>1.25</b>
<b>121-135</b>	<b>0.09</b>	<b>0.09</b>	<b>0.57</b>	<b>0.58</b>
<b>136-150</b>	<b>0.06</b>	<b>0.08</b>	<b>0.24</b>	<b>0.30</b>
<b>150above</b>	<b>0.00</b>	<b>0.00</b>	<b>0.08</b>	<b>0.09</b>
Total	106.05	7.95	127.19	16.43

6.4.1.2. The growing stock for Teak 60 cm and above is 10.82 cum per ha. while it was 3.81 cum per ha. at the start of Vinod Kumar, Ramjising Yadav and G.P.Garad's plan.

Normal Growing Stock

6.4.1.3. An effort has been made below to find out how close is the existing growing stock in Selection Working Circle to the normal growing stock.

The normality of an uneven aged selection forest is judged by the number of trees in each size class. It must contain more small trees than big one per hectare. Here attempt has been made to construct a simple model on the basis of F.De Liocourts theory that the number of stems in a Selection forest lessens from one size class to the next larger class in a geometrical progression, so that ratio of diminution is constant and at the same time comparing to yield table of All - India plantation teak quality III/IV is given under table below:-

Table 6.11.  
Growing Stock Model based on All-India Teak Yield Tables

Age	No. of Trees	Reducing No.	30% of Column 3
1	2	3	4
5	-	-	-
10	1332	83.25	24.98
15	882	55.13	16.54
20	670	41.88	12.56
25	544	34.00	10.20
30	457	28.56	8.57
35	390	24.38	7.31
40	346	21.63	6.49
45	319	19.94	5.98
50	294	18.38	5.51
55	274	17.13	5.14
60	257	16.06	4.82
65	240	15.00	4.50
70	227	14.19	4.26
75	215	13.44	4.03
80	203	12.69	3.81
Total		415.63	124.69

Column No.2 gives no. of trees on one ha. of land for 16 ages. Each represent 5 age gradations the total of this column represents what could be the crop on 16 ha. of forest land if all the age classes are mixed together. Dividing each figure in column 2 by 16 gives crop on 1/16<sup>th</sup> ha. as in column 3 and total of column 3 the crop of 1 ha. is with age gradation from 1 to 80. This figure is for a fully stocked area. As the Amaravati area has 30% of the crop as Teak for the sake of comparison column 3 figure has been reduced to 30% in each age class.

The following table gives the figure of (i) existing growing stock, (ii) existing growing stock modified on F.De Liocourts theory and (iii) Teak normal growing stock as per yield table of Teak.

Table 6.12.

No. of Teak Trees per ha.

Existing Growing Stock		Normal Growing Stock	
Girth Class	Actual No.	F.de Liocourt	30% Teak Yield Table
<b>15-30</b>	<b>39.65</b>	40.91	<b>41.51</b>
<b>31-45</b>	<b>33.68</b>	<b>28.06</b>	<b>22.76</b>
<b>46-60</b>	<b>24.07</b>	<b>19.25</b>	<b>15.88</b>
<b>61-75</b>	<b>14.45</b>	<b>13.2</b>	<b>12.47</b>
<b>76-90</b>	<b>9.49</b>	<b>9.05</b>	<b>10.65</b>
<b>91-105</b>	<b>3.45</b>	<b>6.21</b>	<b>9.35</b>
<b>106-120</b>	<b>1.52</b>	<b>4.26</b>	<b>8.29</b>
<b>120-135</b>	<b>0.57</b>	<b>2.92</b>	<b>3.81</b>
<b>136-150</b>	<b>0.24</b>	<b>2</b>	-
<b>150&amp; above</b>	<b>0.08</b>	<b>1.37</b>	-
Total	127.19	127.23	124.72

From the above figure it becomes evident that total no. of teak trees of existing growing stock and normal growing stock are comparable but the presence of higher girth class trees i.e. more than 90 cms. is very low in the existing growing stock, when compared with normal growing stock.

Volume Table :-

6.4.1.4. Teak is an important species for which volume calculations are to be carried out nearest to the real values. Therefore for calculation of volume Teak site quality wise local volume table based on quarter girth measurements prepared by F.D.C.M is under use from previous working plan. The same is being continued and is at Appendix No. LXVIII.

Present Removal :-

6.4.1.5. The removal is carried out as per the previous working plan prescriptions for Selection Cum Improvement working circle. The data of exploitation of timber and fire wood received from the division is as follows;

Table 6.13.

Sr. No.	Name of Felling Series	Total No. of Coupe	Area	No of Coupe Worked	Area	Yield			Yield per Ha.	% of area worked
						Timber	Fuel	Total		
1	Lakhara	10	1405.40	10	1405.40	307.00	6608.64	6915.64	4.92	100.00
2	Shekdari	10	2345.57	9	2146.87	948.46	2097.06	3045.52	1.30	91.53
3	Wai	10	2307.15	9	2046.53	809.37	4329.27	5138.64	2.23	88.70
4	Linga	10	1989.94	8	1670.23	905.29	7001.39	7906.68	3.97	83.93
5	Pohra	10	1356.51	2	253.00	388.41	692.40	1080.81	0.80	18.65
6	N/Chirodi	10	1188.16	4	466.16	172.47	266.80	439.27	0.37	39.23
7	S/Chirodi	10	1465.04	0	0.00	0.00	0.00	0.00	0.00	0.00
8	Wadhona	10	1312.45	2	298.64	99.91	64.20	164.11	0.13	22.75
9	Wishroli	10	1727.04	1	170.84	86.31	129.60	215.91	0.13	9.89
Total -		90	15097.24	45	8457.67	3717.22	21189.36	24906.58	13.85	56.02

The above figure shows that felling series at sr.no.5 to sr.no.9 of which total coupe area is 5979.189 ha. out of which worked area is 1186.63 ha. which is only 20% of the area. Secondly the average yield per ha. of these five felling series is 0.354 cum. per ha. if it is considered for ten years then it comes to 0.0354 per ha. per year which is very minuscule and appears non practicable. Therefore these felling series need not continue in Selection Cum Improvement working circle.

INFERENCES :-

6.4.1.6.

- (i) The occurrence of Teak is about 30% in all the forest.
- (ii) In 4 felling series namely Wai, Linga, Lakhara, Shekdari the stocking in no. of trees as well as volume per ha. particularly volume of Teak timber has increased during the Vinod Kumar, Ramjising Yadav and G.P.Garad's plan.
- (iii) Regeneration of Teak and its associates is deficient.
- (iv) The present yield is low.
- (v) Present selection of girth of 75 cms. for coppice teak appears to be OK to continue for SCI working circle.
- (vi) The five felling series of SCI namely Wadhona, Wishroli, North Chirodi, South Chirodi and Pohara are not fit to be continued in SCI working circle. Therefore these areas need to be transferred to Improvement working circle to increase growing stock.
- (vii) Almost no works are carried out in Kuran working circle.



PART – II

FUTURE MANAGEMENT DISCUSSED  
AND  
PRESCRIBED

## CHAPTER – I

### BASIS OF PROPOSALS

#### SECTION: 1.1: NATIONAL FOREST POLICY

1.1.1.1 **India's Forest Policy was first enunciated by the British Crown in the year 1894 in their resolution N022-F, dated October 19, 1894. After Independence First National Forest Policy was formulated by the Government of India by its resolution No. (Agri) 13<sup>th</sup> January, 1952-F dated 12<sup>th</sup> May, 1952. Latest National Forest Policy was passed by Ministry of Environment and Forests in 1988. The changes in the policy were made as per the prevalent national needs and public requirements, both of local and general. The abstract of the above National Forest Policies of India is given below.**

#### SECTION: 1.1.2: FOREST POLICY 1894 FOR INDIA.

1.1.2.1 **The general forest policy was enunciated in the year, 1894 by the Government of India vide resolution No. 22-F, dated October 19, 1894. As per this policy the forests were to be administered solely for the public benefits, both local and general. The outstanding principles of this policy were as under.**

- (i) **The preservation of climatic and physical conditions of the country was the foremost.**
- (ii) **The preservation of minimum amount of Forest necessary for the general well-being of the country was second to above.**

**On the fulfillment of the above two conditions, the other priorities were as under.**

- (i) **Cultivation to be given priority over forestry.**
- (ii) **Satisfaction of the needs of the local people free or at noncompetitive rates to be given priority over revenue and**
- (iii) **After satisfying the above requirements, the realization of revenue to the greatest possible extent was to be considered.**

#### SECTION: 1.1.3: NATIONAL FOREST POLICY OF 1952.

1.1.3.1 **Since the enunciation of 1894 policy, considerable development for reaching importance had taken place in economical and political fields. The part played by forests in maintaining the physical conditions of the country came to be better understood. The country had passed through two world wars, which disclosed unsuspected dependence on forests. The reconstruction schemes, such as river valley projects, development of industries and communications, leant heavily on Forest Produce.**

1.1.3.2 **Taking into consideration the changes which took place in the physical, economic and political fields during the intervening period, the forest policy was reoriented in 1952, vide Government of India in Food and Agricultural resolution No.(Agri.) 13/01/52 dt.13/05/1952. It was based on six paramount needs of the country, namely :-**

- (i) **The need for evolving a system of balanced and complementary land use, under which each type of land is allotted to that form of use under which it would produce most and deteriorate least.**
- (ii) **The need for checking:-**
  - (a) **Denudations of mountainous regions, on which depends the perennial water supply of the river system whose basins constitute the fertile core of the country.**
  - (b) **The erosion that is progressing with a pace along the treeless banks of the great rivers leading to ravine formation and on vast stretches of undulating waste lands depriving the adjoining fields of their fertility.**
- (iii) **The need for establishing tree lands, wherever possible for the amelioration of physical and climatic conditions, promoting the general well being of the people.**

- (iv) **The need for ensuring progressively increasing supplies of fodder for cattle, small timber for agricultural implements and in particular of firewood.**
- (v) **The need for sustained supply of timber and other forest produce.**
- (vi) **The need for the realization of the maximum annual revenue in perpetuity consistent with the fulfillment of the need highlighted above.**

1.1.3.2 The National Forest Policy further stated that while observing these general principles in paramount national interest the discretion of the state government to regulate the details of forest and administration in their respective territories is left unfettered to enable them to frame their policies and legislation for conserving and utilizing the forest policy of a state does not impinge adversely.

#### SECTION: 1.1.4: NATIONAL FOREST POLICY OF 1988

The subject of forest has been brought to the concurrent list from the state list, with the effect of 42<sup>nd</sup> Amendment to the Constitution of India, which enables 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, where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country.**
- 2) **Conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources of the country.**
- 3) **Checking soil erosion and denudation in the catchment areas of rivers, lakes, reservoirs in the "interest of soil and water conservation, for mitigating floods and droughts and for the retardation of siltation of reservoirs.**
- 4) **Checking the extension of sand-dunes in the desert areas of Rajasthan and along the coastal tracts. Increasing substantially the forest/tree cover in the country through massive afforestation and social forestry programs, especially on all denuded, degraded and unproductive lands.**
- 5) **Meeting the requirements of fuel-wood, fodder, minor forest produce and small timber of the rural and tribal populations.**
- 6) **Increasing the productivity of forests to meet essential national needs.**
- 7) **Encouraging efficient utilization of forest produce and maximizing substitution of wood.**
- 8) **Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimize 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.**

1.1.5 Based upon these objectives the features of National Forest Policy of 1988 are as follows:-

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

SECTION: 1.1.5: MAHARASHTRA FOREST POLICY, 2008:

**Maharashtra State has prepared the "Maharashtra Forest Policy, 2008 with focus on "Sustainable management of forests and wildlife in the State". The policy also focuses on formulation of District wise plan for achieving 33% of forest cover in the State.**

Some of the Objectives of the policy include:-

- **To achieve sustainable development and conservation of forests through their scientific management, this will help in maintaining ecological balance and environmental stability.**
- **Afforestation on wastelands for soil and water conservation.**
- **To increase forest cover on available government, public and private lands through participation of women and unemployed people, with the help of social Forest and Agricultural nurseries.**
- **Implementing long term plans and action plans for Conservation of wildlife and biodiversity.**
- **Management of catchments areas for soil conservation.**
- **Joint Forest Management.**
- **Eco-tourism policy.**
- **Reduction in use of timber and other forest produce.**
- **Establishing Forest Development Corporation of Maharashtra (FDCM).**

SECTION: 1.2: CLASSIFICATION OF FORESTS:

**1.2.1. The broad and general principles for the classification of forests is embodied in the State Government vide R & FD Resolution no. MFP-1365/132211-Y, dated December 6, 1968. Taking the above principles into consideration, the forests of the state are to be classified and managed as follows:**

- (a) **Protection Forests,**
- (b) **Tree Forests,**
- (c) **Minor Forests,**
- (d) **Pasture Lands and**
- (e) **Miscellaneous Forests.**

1.2.1.1. PROTECTION FORESTS: This includes forests which occur on very steep slope (25 degree and over) or along river banks, and forests that have become depleted through maltreatment, and further harvesting of which will accelerate soil erosion and adversely affect the productivity of agricultural lands in the lower regions. The management should be aimed at rapidly conserving these forests so that they may once again exert their beneficial influence on the soil, the water regime and the physical and climatic factors of the locality.

1.2.1.2. TREE FORESTS: This includes forests which are situated in remote tracts that are prominently suited for growing large sized timber and other products of commercial value.

1.2.1.3. MINOR FORESTS: This includes forests that are interspersed with cultivated lands and are capable for producing small timber and firewood and providing grazing, which are the indispensable needs of the adjoining agricultural population.

1.2.1.4. PASTURE LANDS: These are open forests or scrub lands that have ceased to yield even small timber but which are conveniently situated for providing grazing to the cattle used on agricultural works.

1.2.1.5. MISCELLANEOUS FORESTS: These include:

a) GRASS RESERVES: These are small blocks of forests situated almost intensively tracts carrying scrubby growth and capable of producing good fodder grasses which are in short supply.

b) Remaining areas, which are needed for other purpose.

1.2.1.6 CLASSIFICATION: On the above functional basis forests of the tract dealt with are classified as under:

Table 1.1.  
CLASSIFICATION OF FORESTS  
Stock mapping during Bahadur`s plan period

Areas are in hectare.

WC	SQ	TEAK	MIXED	SALAI	TEAK	OTHERS	US&BLK	CLTVN	TOTAL
IWC	IVb	479.58	1784.00	932.93	143.45	152.00	3532.90	56.43	7081.30
CWR	III	15.00	0	0	0	0	0	0	15.00
CWR	IVa	610.95	45.21	0	0	0	0	0	656.16
CWR	IVb	3095.60	1967.00	15.835	87.00	19.00	2156.40	35.96	7376.90
FWWC	BABUL	0	1062.90	0	0	0	3302.30	6.80	4372
KWC	IVb	57.70	828.19	1043.8	0	54.822	5479.60	0	7464.10
AWC	IVb	0	251.09	90.00	886.54	0	20901.00	1178.70	23307.00
Misc.	-	0	0	0	0	0	1164.70	0	1164.70
Total		4258.90	5938.50	2082.50	1117.00	225.82	36537.00	1277.90	51437.16

FW WC = Fuel wood Working Circle,  
KWC = Kuran Working Circle,  
AWC = Afforestation Working Circle,

SECTION: 1.3: FACTORS INFLUENCING THE GENERAL OBJECTS OF MANAGEMENT:

1.3.1.1. The National Forest Policy, 1988 is the guiding principles to decide the general objects of management. This policy recognizes the services rendered by the forest to all living creatures. The services (indirect benefits) given to the society by the forest through its existence are indispensable and have more weight age than physical benefits in terms of timber and firewood coming from felling of trees. The existence of life on any planet simply cannot be imagined without the existence of the vegetation.

Therefore, taking out direct benefits from the forests cannot be the primary objectives of the forest management. However, the direct benefit will also come through operations required to maintain the forests in healthiest conditions. On achieving these conditions of the forests, automatically both direct and indirect benefits will be optimum. Thus the orientation of the management is to have first the forest in balance and healthiest condition so as to have optimum perpetual benefits from it.

1.3.1.2. So far we followed the path and policy of management decided by the British Administration, whose main objective was to have maximum revenue. The basics of management were side tracked. The basic principle of management is to use the interest keeping principal intact. The optimum level of balanced stocking in any site is the principal; however, this could not be quantified. Without its quantification it is not possible to identify interest and distinguish interest from principal.

1.3.1.3. Forest with balanced distribution of age classes is called normal forest. In such a state of forest, there is a balanced movement of stems from lowest to the highest girth classes in a very natural way. This is the ultimate state of the forest, which is to be achieved and maintained.

1.3.1.4. The distribution of the number of stems/ha in different girth classes forms a structure of the forest. In a normal forest this structure is inverse J-shaped curve. With reference to this structure we can easily evaluate our efforts to achieve the ultimate goal.

1.3.1.5. Forest crop is a dynamic biological entity, which keeps on changing and putting on increment. The rate of increment depends on the site quality, age, species and stocking of the individual trees in the crop. The optimum stocking varies with age of the crop and corresponds to maximum increment. In an all aged crop, optimum stocking implies the balanced distribution of stems of all ages. Total increment falls off as the stocking changes from the optimum level.

1.3.1.6. The main object of management is to obtain an optimum level of stocking and to extract the optimum increment periodically, on a sustained basis, without harming the future crop. Thus there are two aspects of the management:

- (i) To visualize the ideal state of the forest i.e. optimum stocking, distribution of stems and species in different age classes etc. (This is what we want to have, i.e. goal).
- (ii) To devise means to take out optimum increment periodically, without disturbing the future crop. (This is what we should do to have what we want.)

Thus what we want to have and what we should do to have the same, is the essence of any scientific management system

1.3.1.7. The achievement of goal corresponds to the state of optimum production. However, this optimum production is in terms of quantity of the species existing in the crop. To optimize the production in both in terms of quality and quantity, modification in crop composition is needed. The change in composition of the crop can be brought about in two steps:

(A) In first step, crop composition will be improved by way of giving preferential treatment, in the existing crop while carrying out silvicultural operations. However, this cannot bring the crop composition to the desired level because of the two limitations:

- (i) Fixed number of seedlings of preferred species in the existing crop, that number cannot be increased. and
- (ii) The number of stems surplus in that girth class against which preference is to be given to the desired species.

(B) In the second step, if the existing seedlings of preferred species are less than the desired numbers, gap plantings of those species in required number will be initiated. The experiment of gap planting should be started with only one or two silviculturally suitable species. For this local valuable species should be preferred. On getting success, the number of species may be increased upto six. After introduction, the principle of preferential treatment should be kept on applying to maintain them.

1.3.1.8. The tribal people, being the part and parcel of the forest, their welfare should have one of the considerations of the management. The management of non-timber forest produce on scientific lines has the direct bearing with the welfare of the tribal and local villagers and therefore, this aspect is to be taken into consideration.

SECTION: 1.4: GENERAL OBJECTS OF NEW MANAGEMENT:

1.4.1.1. On the basis of National Forest Policy 1988, points discussed above, the general objects of management decided are as follows:

- (i) To bring normalcy in the forest.
- (ii) To preserve forest cover on steep slopes, along Nala banks and water courses to prevent soil erosion and to preserve site and environment.
- (iii) To meet the requirement for small timber, firewood, fodder and non-timber forest produce of the local population on top priority. Consistent with above objectives, to produce large sized timber on sustained yield basis.
- (iv) To take up activities aiming at welfare of the tribal and local villages and thereby to increase the production of non-timber forest produce and to manage the same scientifically to utilize the potential to the optimum possible extent on sustained yield basis.
- (v) To take up measures to protect, develop and conserve wild animals in this tract.
- (vi) To involve JFMC in harvesting, afforestation and other forestry related activities.

SECTION: 1.5: METHODS OF TREATMENT TO BE ADOPTED:

1.5.1.1. National Forest Policy have laid down the emphasis on conservation of biodiversity and meeting the demands of local people. Accordingly, the object of management of the forests has been fixed. To achieve these objectives of the management comprehensive approach has been adopted in the management of the forests. For the conservation of biodiversity and the site, soil and moisture conservation works will be taken. These works will be conducive to watershed development and for that sequencing of coupes will be from ridge to valley. Natural regeneration will be preferred over the artificial regeneration, in areas where it is adequate. Suitable soil working and tending operations will be carried out to stimulate and enhance the growth of naturally regenerated seedlings. To meet the local demand of the people, an assessment of their requirements will be made by the territorial division and efforts will be taken to meet these requirements to the possible extent. Active participation and involvement of local people in protection, regeneration and development of forests have been made through Joint Forest Management. Special emphasis on protection of forests from fire, grazing and illicit cutting has been made. Taking into the consideration the above aspects besides the growing stock and condition of the site has made the functional classification of forests. The various types of forests will be treated as follows:

1.5.2.1. PROTECTION FORESTS: Most of these areas lie along the steep slopes of Satpura hills and other hillocks, along the Nala banks, along the river banks and other water bodies and are found in scattered. They will be treated under the category 'A' of the respective coupe in each working circle. No felling except over mature and dead dying trees is prescribed in these areas. Soil and Moisture Conservation works will be taken up with artificial regeneration with seed sowing on the bunds created for that.

1.5.2.2. TREE FORESTS: These forests are mainly of better quality, timber producing and less prone to erosion. They belong to all India Teak and Mixed Site Qualities, III, III / IV, and IV. The trees are generally straight bole The management prescriptions will be as per the site quality and it will be oriented to give more importance to Cut Back Operations, Cleaning, Thinning etc. silvicultural operations along with extraction of silviculturally available material ensuring eternal future crop. Therefore, during this plan period SCI working circle have been prescribed for betterment of hygiene of forest and meeting the future requirement of the population.

1.5.2.3. **MINOR FORESTS:** These forests are of comparatively of low quality and badly treated in the past by prescribing inappropriate silvicultural system, which has reduced the proportion of valuable and important trees in the crop. They were worked under Coppice With Reserve in previous working plan periods. Crop is young with scattered middle aged and rare mature and over mature trees. Mature trees, which are rarely seen, are mainly fruit trees species, which had been selected as reserve for long time. Among such species, moha is prominent. Since forests are badly disturbed and so during this plan period only appropriate silvicultural operations at an appropriate intervals has been prescribed. Special thoughts and measures have been prescribed to solve the problems of grazing and fire, which are main hurdles in the way of achieving normalcy.

1.5.2.4. **MISCELLANEOUS FORESTS:**

1.5.2.5. **OTHER FORESTS:** In these areas survey and demarcation of the areas will be first priority. Since the areas are mostly open and under tremendous pressure of biotic interference due proximity to habitation and age old practices of free grazing or use as camping ground for local cattle, the vegetation cover is sparse or dismal. Afforestation is to be taken. Besides these to develop the areas under forests cover soil and moisture conservation works will be emphasized.

SECTION: 1.6: ANALYSIS AND VALUATION OF THE CROP:

1.6.1.1. **During this plan preparation all the compartments of the whole tract have been covered, including Reserved Forests, Protected Forests and area taken by Division as acquired under Compensatory Afforestation Scheme, for enumeration of growing stock after sorting the areas with the help of satellite imageries maps and density of stock therein. Area under less than 0.4 densities has not been taken under enumeration. In the remaining area 1% sampling have been carried out for enumeration with the help of existing staffs in the working plan division. Results have been computed and report generated with the help of specific software package specially developed for this purpose.**

1.6.1.2. **Under this plan the density maps for the tract dealt with have been prepared by visual interpretation technique using remote sensing data at the office of Conservator of Forests Working Plan at Amravati (MS). These data had been used for enumeration of growing stock.**

SECTION: 1.7: WORKING CIRCLES:

1.7.1.1. **Based on the above considerations, following working circles have been carved out:**

i)	<b>Selection Cum Improvement Working Circle</b>	-	<b>8048.053 ha.</b>
ii)	<b>Improvement Working Circle</b>	-	<b>6476.900 ha.</b>
iii)	<b>Afforestation Working Circle</b>	-	<b>21248.315 ha.</b>
iv)	<b>Protection Working Circle</b>	-	<b>1223.023 ha.</b>
v)	<b>Babul ban Working Circle</b>	-	<b>4025.884 ha.</b>
vi)	<b>Kuran Working Circle</b>	-	<b>7220.659 ha.</b>
vii)	<b>Urban Forestry Working Circle</b>	-	<b>2166.701 ha.</b>
viii)	<b>Misc. Working Circle</b>	-	<b>1622.346 ha.</b>
	<b>Total</b>	-	<b>52031.881 ha.</b>

1.7.1.2. **The extent of areas under each working circle has been given in Appendix No. XXVI in Volume II of this plan. Constitution of working circles along with number of compartments and area incorporated therein have been given in Working Plan. The extent of areas, working circle range wise have been given in the Working Plan. The statement showing the allotment of compartments to different working circles have been given in Appendix No. XL of this plan.**

SECTION: 1.8: BLOCKS AND COMPARTMENTS:

1.8.1.1. **The forests of Amravati, Chandur Rly., Paratwada, Morshi and Warud Forest Ranges are either divided into Blocks or scattered. The entire forest areas included into this plan is 52031.881 hectare out of which 51722.471 hectare of Reserved Forests, 69.780 hectare of Protected Forests and 239.630 hectare of Un classed Forests. New compartment numbers have been given to the areas covered under this plan for the first time treating each separate polygon of forest as distinct compartment. Similarly, old compartments those have more than one polygon have been renumbered for the sake of computer compatible identity for each forest area for computer compatible data creation and report generation.**

**Statement showing existing organization of Ranges, Round & Beats of Amravati Division is given in Appendix No. XXV.**

SECTION: 1.9: PERIOD OF THE PLAN:

1.9.1.1. **The period of the plan is fixed as 10 years after final sanction from competent authority after that it will be revised. Midterm review of the prescriptions of the working plan may be carried out after expiry of 5 years of operation and if any noticeable changes in achievement of any objective are observed those would be accordingly incorporated after getting sanction from competent authority.**

Period of the plan: - **From 2014-15 to 2023-24.**



## CHAPTER II

### WORKING PLAN FOR SELECTION CUM IMPROVEMENT WORKING CIRCLE

#### SECTION: 2.1: GENERAL CONSTITUTION:

2.1.1.1. The areas included in this working circle were previously treated under Selection Cum Improvement working circle under last working plan written by Vinod Kumar, Ramjising Yadav and G.P. Garad. The area allotted to this working circle in previous plan is 15097.242 ha. which include reserve forest and protected forest areas. This area was treated under coppice with reserve system under Shailendra Bahadur's plan with the aim to regenerate it with coppice with reserve or under Improvement with aim to improve the forests by giving them hygienic operation to prepare them to be ready for selection felling. The required coppice regeneration was not obtained. The existing crop is mostly from seed origin. The main objective of the management is to have the forests produce in perpetuity and the demand of local population to have small timber and pole is to be met with. The goal to have normal forests with optimal sustained production can be met if we have the silvicultural system of Selection Cum Improvement. In this system the regeneration is obtained naturally by opening the crown through removal of stem of above specific girth known as harvestable girth and giving hygienic treatment to rest of the crop below harvestable girth that is cut back operation, thinning of young crop, removal of dead, dying trees and preparing the soil ready to have natural regeneration established.

Table 2.1.  
Allotment of area in SCI (area in ha)

Sr. No.	Name of Range	Range Area	SCI Area	% wrt Range	% wrt Division
1	Amravati	10139.947	-	-	-
2	Chandur Rly.	11345.739	-	-	-
3	Paratwada	8145.115	-	-	-
4	Morshi	12201.235	1405.401	11.52%	2.70%
5	Warud	10199.845	6642.652	65.12%	12.77%
Total S.C.I. "A" Class		52031.881	8048.053	-	15.47%

Table 2.2.  
Table showing Felling Series wise area of Previous Plan and Present Plan (area in hectare)

Previous Plan			Present Plan		
SCI Working Circle			SCI Working Circle		
Sr.No.	Felling Series	Area(ha)	Sr.No.	Felling Series	Area(ha)
1	Wai FS	2307.146	1	Wai FS	2307.146
2	Linga FS	1989.936	2	Linga FS	1989.936
3	Shekdari FS	2345.570	3	Shekdari FS	2345.570
4	Lakhara FS	1405.401	4	Lakhara FS	1405.401
5	Pohara FS	1356.506			
6	N Chirodi FS	1188.157			
7	S Chirodi FS	1465.043			
8	Wadhona FS	1312.445			
9	Wishroli FS	1727.038			
SCI WC		15097.242	Total SCI WC -		8048.053

SECTION: 2.2: GENERAL CHARACTER OF THE VEGETATION:

2.2.1.1. Site quality: **All India Teak Site quality of the tract is mainly IV and III/IV whereas site quality III is found in better soil supporting areas.**

2.2.1.2. Density: **In general the density of the crop is above 0.4 and at some places it is less than 0.4.**

2.2.1.3. Major species: **Teak (*Tectona grandis*).**

2.2.1.4. Other species - **Salai, Dhawada, Mowai, Ain, Haldu, Behada etc.**

2.2.1.5. Age of the crop: **Young, middle aged some trees of mature / higher ages. The area in general supports the forest crops of Teak and its associates and other low value trees. Teak constitutes around 30% of the stock.**

2.2.1.6. Mixed Forests: **These forests are of Site Quality IV. Mixed forests are distributed all over the division. Existing crop is malformed and crooked due to various factors. The important species occurring in the area are Teak, Salai, Anjan, Khair, Movai, Tendu, Bhosa, Bor etc. The natural regeneration of Teak and other species is scanty. In few favourable sites good plantations of Teak, Khair, Anjan and other species were raised. The entire forest is infested by Lantana (*Lantana camara*), Rantulas (*Hyptis suaveolens*) and Gajar gavat (*Parthenium hysterophorus*). Bamboos are found in moist places of Morshi and Warud Ranges. Natural Regeneration is scanty but whatever is there it fails to establish. In the area where fire and heavy grazing are occurring regularly established natural regeneration is very less.**

SECTION: 2.3: SPECIAL OBJECTS OF MANAGEMENT:

2.3.1.1. **To compensate the various adverse factors and ill treatment given in the past it becomes necessary that treatment to the forest needs to be so adopted that it attains normalcy. At present, the crop is generally young to middle aged. Therefore the prime object of management here is to have a normal forest. The prescriptions of last working plan regarding selection cum improvement working circle are implemented in all the felling series. Considering better results of these prescriptions it is proposed to continue it in this working plan also, accordingly the following are the special objects of management:-**

1. **To improve general stocking of forest in terms of crop density, composition, quality and regeneration.**
2. **To gradually replace low vigour and stunted coppice crop growth to convert it into High Forest.**
3. **To maintain and improve soil cover through intensive soil and moisture conservation measures.**

SECTION: 2.4: COMPARTMENTS AND FELLING SERIES:

2.4.1.1. **48 Compartments have been allotted to this Working Circle. They have been divided into 04 Felling Series having 10 Coupes in each Series. Average annual area of the coupes is 800 Ha. The coupe wise details have been given in Appendix No. XL of volume II of this plan.**

Table 2.3

Name of W.C.	Range	Name of F.S.	Total Area	Compt. No.	Total compt. No.
S.C.I.	Morshi	Lakhara	1405.401	857,858,859,860,862,863,886,887,890,891,892,893,895,896,	14
S.C.I.	Warud	Shekdari.	2345.570	979,980,982,984,986,987,989 to 993	11
S.C.I.	Warud	Wai.	2307.146	994,995,1000 to 1005,1008 to 1012,1031	14
S.C.I.	Warud	Linga	1989.936	1018 to 1020, 1028 to 1030,1032 to 1034	9
	S.C.I.	Total	8048.053		48

## SECTION: 5: ANALYSIS AND VALUATION OF THE CROP.

2.5.1.1. Stock Mapping: - **Stock mapping has been carried out in the areas of Selection Cum Improvement Working Circle with established method by staff of Forest Resources Survey Scheme and Working Plan Division Unit.**

2.5.2.1. Enumerations: - **Enumeration's have been carried out in 424 sample plots spread over the entire working circle of previous plan. This work includes enumeration of species girth class wise and in regeneration along with site quality and density by the existing staff of the Forest Resource Survey Unit under working plan division Amravati during 2010-11. Enumeration data is analyzed by statistical wing and the results are given in Appendix No.XXXIV. As per enumeration results, composition and structure of forest crop in SCI area is given below:-**

Table 2.4  
Comparison of growing stock during 2000-01 to 2010-11  
for area of SCI WC (15097 Ha.)

Girth Class	2001-02			2010-11			% Change over the period		
	Teak	Non-Teak	Total	Teak	Non-Teak	Total	Teak	Non-Teak	Total
15-30	48.97	76.38	125.35	23.01	61.02	84.03	53	20	33
31-45	31.50	55.08	86.58	22.28	45.24	67.52	29	18	22
46-60	13.84	27.11	40.95	14.48	32.07	46.55	5	18	14
61-75	7.15	17.92	25.07	8.45	19.06	27.51	18	6	10
76-90	2.87	9.21	12.08	5.39	9.99	15.38	88	8	27
91-105	1.17	4.55	5.72	1.85	4.39	6.24	39	4	3
106-120	0.40	1.76	2.16	0.91	1.67	2.58	56	5	19
121-135	0.09	0.56	0.65	0.24	0.71	0.95	62.5	21	32
136-150	0.06	0.52	0.58	0.12	0.36	0.48	50	31	17
> 151	0.00	0.00	0.00	0.05	0.22	0.27	-	-	-
Total	106.05	193.1	299.14	76.78	174.7	251.5	-	-	-

**It is evident from above table that teak constitutes almost 30% against miscellaneous species of 70%.**

2.5.3.1. Regeneration: - **During the enumeration activity data of regeneration status of various species in the form of R1, R2 and R3 is collected. These data is also analyzed and is found that the status of natural regeneration is not satisfactory. The detail of species wise regeneration is shown as below:-**

Table 2.5  
Table showing status of species wise natural regeneration

No. of Sample plots 1364

Area in Ha. 54.56

Sr. No.	Species	R1	R2	R3	Total R	Average NR/Ha.
1	Ain/Saja/Sajad	63	23	9	95	1.74
2	Ajan	9	6	2	17	0.31
3	Aal/Ahl	40	10	3	53	0.97
4	Amaltas/Bahawa	18	20	7	45	0.82
5	Anjan	4	3	3	10	0.18
6	Aonla/ Amla	0	1	0	1	0.02
7	Apta/Bhosa/Sehra	96	53	21	170	3.12
8	Babhul	443	196	33	672	12.32
9	Bahawa	17	24	7	48	0.88
10	Bamboo	0	1	0	1	0.02
11	Behada	12	4	0	16	0.29
12	Bel	31	4	0	35	0.64
13	Bhera/Bhirra	888	641	208	1737	31.84
14	Bhingari	5	4	0	9	0.16
15	Bhivra	1	0	0	1	0.02
16	Bhosa	36	31	8	75	1.37
17	Biba/Bhilawa	8	5	0	13	0.24
18	Bor	618	345	33	996	18.26
19	Bothi	4	0	0	4	0.07
20	Chandan	32	14	12	58	1.06
21	Chandrajot	13	2	0	15	0.27
22	Char	15	31	5	51	0.93
23	Chichwa	2	3	1	6	0.11
24	Dahipalas/Daiwas	1	1	0	2	0.04
25	Dhaman	14	3	1	18	0.33
26	Dhaora	252	218	93	563	10.32
27	Dudhi	388	361	154	903	16.55
28	Fasi	4	4	1	9	0.16
29	Garadi	0	20	0	20	0.37
30	Ghatbor	51	20	1	72	1.32
31	Ghogar	6	1	0	7	0.13
32	Ghoti	52	42	2	96	1.76
33	Glirisidia	2	14	3	19	0.35
34	Gondan	2	0	0	2	0.04
35	Gurguti	0	1	0	1	0.02
36	Harasi	30	0	0	30	0.55
37	Hingan	246	78	24	348	6.38
38	Hiwar	706	397	73	1176	21.55
39	Kadhai	1	0	0	1	0.02
40	Kadka	1	0	0	1	0.02
41	kadubadam	11	0	0	11	0.20
42	Kakai	1	1	0	2	0.04
43	Kalamb	2	0	0	2	0.04

Sr. No.	Species	R1	R2	R3	Total R	Average NR/Ha.
44	Karanj	7	9	1	17	0.31
45	Karasali	6	5	0	11	0.20
46	Kashid/Cassia	8	0	0	8	0.15
47	Katbilai	22	4	0	26	0.48
48	Katbor	112	63	44	219	4.01
49	Kateyen	2	0	0	2	0.04
50	Katsawar	0	3	1	4	0.07
51	Khair	547	381	95	1023	18.75
52	Kharashi	43	29	17	89	1.63
53	Kumbhi	1	0	0	1	0.02
54	Kutavi	0	1	0	1	0.02
55	Lendia	27	28	1	56	1.03
56	Lokhandi	12	4	2	18	0.33
57	Medsing	0	1	0	1	0.02
58	Moha	0	1	0	1	0.02
59	Moin	9	5	3	17	0.31
60	Mokha	2	0	0	2	0.04
61	Mowai	26	18	10	54	0.99
62	Neem	184	80	25	289	5.30
63	Palas	4545	1563	326	6434	117.93
64	Panchandra	30	0	0	30	0.55
65	Papda	2	9	4	15	0.27
66	Parijatak/Kharasli	17	18	0	35	0.64
67	Pendhra	13	2	0	15	0.27
68	Phephar	1	7	0	8	0.15
69	pithod	0	3	0	3	0.05
70	prosofis	37	15	0	52	0.95
71	Rohan	19	10	4	33	0.60
72	Sajad	21	0	0	21	0.38
73	Salai	25	23	14	62	1.14
74	Senegal	4	1	0	5	0.09
75	Shahara	2	0	0	2	0.04
76	Shindi	30	40	3	73	1.34
77	Shiras	2	1	0	3	0.05
78	Shisham	0	1	0	1	0.02
79	Sisoo	1	0	0	1	0.02
80	Sina	7	4	0	11	0.20
81	Singurde	20	0	0	20	0.37
82	Sitaphal	42	110	54	206	3.78
83	Subabul	7	1	1	9	0.16
84	Teak	636	784	264	1684	30.87
85	Tembhurni	10	7	0	17	0.31
86	Tendu	655	291	98	1044	19.13
87	Theter	11	8	2	21	0.38
88	Tiwas	1	1	0	2	0.04
89	Wavada	17	0	0	17	0.31
Total		11288	6113	1673	19074	349.60

## SECTION : 2.6 : SILVICULTURAL SYSTEM :

2.6.1.1. As the most of the crop is of uneven aged and is of mixed composition with some clusters of pure crops, the Silvicultural System to be adopted must be in tune with the betterment of the crop. Most of the mix crop is from seed origin. Teak coppice crop is also present. The system for the tract dealt with here is prescribed as Selection Cum Improvement System. Though the selection girth has been prescribed the removal of stems from lower girth classes are also necessary to have improvement of the crop. Site Quality wise treatment is sought.

For non-teak species data available in the adjoining Nagpur circle is considered. With the help of yield table prepared for Teak plantation the crop composition would be compared and removal of stems from various girth classes will be carried out if the requirement arises. If the site is found having inadequate crop composition natural regeneration will be promoted. If the crop is having any hygienic problem that would be solved accordingly to improve the existing crop for betterment in future. Improvement felling will include all operations e.g. removal of dead, dried, stunted malformed trees aiming to improve the crop within the coupe. Selection of stems for this purpose has been based on factors other than the harvestable girth. To achieve the special objectives of management, "Selection Cum Improvement fellings are supplemented by tending of the crop.

## SECTION : 2.7 : WORKING CYCLE & HARVESTABLE GIRTH :

2.7.1.1. Felling cycle has been fixed at 10 years. Harvestable girth for various important species in SCI WC has been determined at maximum volume production as per the CAI & MAI curves in stem analysis exercises, carried out by the CF Working Plan, Nagpur during 2007. For coppice teak harvestable girth is prescribed as per the CAI & MAI studies carried out during preparation of last working plan. Since we are resorting to Selection cum Improvement felling the selection girth for Teak prescribed here is 75 centimeters girth at breast height for coppice Teak. Harvestable girth is as below:-

Group	Species	Harvestable Girth in cms.
Group-I	Teak (coppice)	75 cms. for site quality IV.
Group-II	Ain, Bija, Haldu, Tiwas and Kalam	135 cms. for site quality III and 120 cms. for site quality IV
Group-III	Dhaoda, Bhirra, Chichawa, Salai, Mowai, Rohan, Shiwan, Shisham, Surya, Kasai, Mokha, Palas, Dhaman, Bhilawa etc.	90 cms. for site quality IV
Group-IV	Lendia, Garadi & Khair & Others	45 cms. for site quality IV
Group-V	Species protected from felling (Semal, Kullu, Beheda, Karai etc. and all fruit trees)	No felling

## SECTION: 2.8 : CHOICE OF SPECIES.

2.8.1.1. The species to be regenerated will be as per site requirement. As the teak is most valuable species it will be given priority wherever site is suitable. The views of members of JFM committee will also be considered. The other species such as Sajad, Shisham, Haldu, Dhaoda, Bhirra, Lendia, Mowai, and Khair will be preferred. In a process the site suitability and people requirement will be harmonized in tune with working plan prescriptions.

## SECTION: 2.9: YIELD CALCULATION: The yield is regulated by area.

The annual yield will be regulated by area by making coupes equi-productive in each felling series, as far as possible. Coupes of about 200 ha each will be laid down.

From the enumeration data the average number of stems per ha for species representing Group-I to IV are calculated. For the purpose of yield, data of each species representing a particular Group is used for Yield calculation. Group wise enumeration data is summarized as under:-

Table 2.6  
Species And Girth Class Wise Distribution (Per Ha.)  
in SCI Working Circle.

Girth Class (cm)	Group - I Teak	Group - II Ain, Bija Haldu, Kalam, Tiwas	Group - III Bhirra, Chichwa, Salai, Mowai, Rohan, Shiwan, Shisham, Surya etc.	Group - IV Lendia, Garadi & Khair & Others	Total	Mid-Girth	Basal Area Factor	Basal Area
15 30	23.01	2.50	30.12	28.39	84.02	22.5	0	0.37
31 45	22.28	1.55	25.60	18.09	67.52	37.5	0.01	0.85
46 60	14.49	0.98	20.95	10.15	46.57	52.5	0.02	1.21
61 75	8.45	0.63	13.04	5.40	27.52	67.5	0.04	1.19
76 90	5.39	0.34	6.95	2.68	15.36	82.5	0.05	1.03
91 105	1.85	0.09	3.12	1.19	6.25	97.5	0.08	0.57
106 120	0.91	0.07	1.15	0.46	2.59	112.5	0.1	0.32
121 135	0.24	0.04	0.39	0.29	0.96	127.5	0.13	0.18
136 150	0.12	0.01	0.17	0.19	0.49	142.5	0.16	0.11
151 & above	0.05	0.01	0.09	0.13	0.28	157.5	0.2	0.06
Total	76.79	6.22	101.58	66.97	251.56	--	--	5.89

Yield Regulation by Smythies Safe guarding Formula:-

Smythies evolved this formula for regulating yield in selection forests of U.P. in thirties. This formula has been used in the past for working in Selection forests of Maharashtra. This formula considers the essentiality of maintaining sustained yield, mostly from selection classes of trees which is termed as selection yield. The method stipulates the following procedure:-

- Fixing the felling cycle and Exploitable Girth.
- Fixing the Girth Classes starting from Selection Girth (Class-I) to successively below it to the youngest.
- Carrying out enumerations in various Girth Classes.
- Every Selection tree is prescribed for felling subject to the limitation fixed to safe guard the Selection Yield, this limitation is the number of approach class (Class-II) trees which pass into Class-I during the felling cycle 'f' represented by 'X'.
- The value of 'X' determined by the formula:-  
 $X = f/t (11 - Z\%11)$ , where  
'f'=felling cycle  
't'=time taken by an Approach class tree to pass into Selection Girth.

'Z'=Percentage of approach class trees that do not pass into Selection Girth in 't' years, due to mortality or removal in thinning, etc. values of 'Z' has been calculated based on long term data obtained from preservation plots maintained by Research division.

- Yield is calculated by the formula:-

$$Y = (X/I + X/2 \times 100 \pm A) \%N$$

Applying the above formula, Yield for different groups of species in as under:

Group -I : - *Teak* belongs to this group. The exploitable girth for Teak Coppice in site quality IV is 75 cms. Time required to pass from approach class to selection class is 12 years. By applying Smythies formula the yield per ha. is 0.76 cum to safe guard future yield the number of selection girth trees to be marked (if silviculturally available) are 1 out of 2.

Group-II : - Species representing this group are *Ain, Bija, Haldu, Tiwas and Kalam*. The exploitable girth for these species in site quality IV is 120 cm. the time required to pass from approach class to selection class is 24 years. By applying Smythies formula the yield per ha is 0.02 cum to safe guard future yield the number of selection girth trees to be marked (if silviculturally available) are 1 out of 3, i.e. 33% of selection trees are to be marked if silviculturally available.

Group-III : - Species representing this group are *Dhawada, Bhirra, Chichawa, Salai, Mowai, Rohan, Shiwan, Shisham, Surya, Kasai, Mokha, Palas, Dhaman, Bhilawa etc.* The exploitable girth for these species in site quality IV is 90 cm. the time required to pass from approach class to selection class is 22 years. By applying Smythies formula the yield per ha is 0.353 cum to safe guard future yield the number of selection girth trees to be marked (if silviculturally available) are 1 out of 2.

Group-IV : - Species representing this group are *Lendia, Garadi and Khair*. The exploitable girth for these species in site quality IV is 45 cm. the time required to pass from approach class to selection class is 19 years. By applying Smythies formula the yield per ha is 0.51 cum to safe guard future yield the number of selection girth trees to be marked (if silviculturally available) are 1 out of 3.

From the above calculations for different group of species, the expected average yield per hectare is 1.65 cum this may vary from coupe to coupe due to differences in growth conditions, distribution of selection girth trees and their silvicultural availability.

Agency of Harvesting : - Demarcation of coupes and marking of trees for felling will be carried out departmentally to meet the silvicultural and technical requirements. Felling of tress logging and haulage of the felled material will be carried out by FLCS/JFMC Departmental as per the existing Govt. directives. Silvicultural operations like cut back operation, cleaning, thinning etc. and other regeneration activities after main felling of the coupes will be carried out under strict supervision of the Forest Department.

SECTION: 2.13: DEMARCATION OF COUPES, PREPARATION OF TREATMENT MAP AND MARKING RULES.

2.13.1.1. DEMARCATION: - Demarcation of first and second coupes will be done in first year of operation. Barring first coupe rest of coupes will be demarcated one year in advance.

2.13.2.1. TREATMENT MAP: - A coupe map will be provided by Working Plan Division, Amravati. The finer details with regard to type of areas will be given by R.F.O. & verified by A.C.F. Deputy Conservator of Forests in charge of Amravati Forest Division will check treatment map as early as possible and guide the staff. Treatment map will include following types of areas:-

2.13.2.2. "A" Type of area: Protection Areas: **It includes the following areas:**

- A1. **Areas with steep slopes i.e. more than 25°**
- A2. **Thirty meter's wide strip on either side of the water course**
- A3. **Area susceptible to erosion**

2.13.2.3. "B" Type of area: - Under stocked Areas:

- B1. **Areas with crown density less than 0.4 and with root stock**
- B2. **Areas with crown density less than 0.4 and without root stock**

2.13.2.4. "C" Type of area:- Pole Crop: **It includes patches of well grown pole crop of teak and other species suitable for retention as a future crop during the working of previous plan operation. The patch should not be less than one hectare at a place.**

2.13.2.5. "D" Type of area: - Well Stocked Areas

**It includes areas with crown density more than 0.4 well stocked areas will be delineated on the basis of site quality.**

2.13.3.1. TREATMENT: - **Gully Plugging and Nala Bunding etc. will be carried out wherever feasible.**

2.13.3.2. "A" Type of area: Protection Areas: **No marking of trees. Dead trees, barring two/ha. will be removed. Seeds of local species will be collected and sowing will be carried out by Vansevak and Beat Officer. Seed sowing will be monitor and verified by Round Officer.**

2.13.3.3. "B" Type of area: - Under stocked Areas: - **Measures will be taken to increase the density of the area naturally/artificially.**

- i) **Rooted stocks will be treated as available established stock and tended to cover the area.**
- ii) **Seeds of suitable species will be sown in bushes to increase the species regime.**
- iii) **Area without rooted stock will be artificially planted.**
- iv) **Singling will be done wherever needed.**

2.13.3.4. "C" Type of area : - **The congested pole crop shall be spaced out to 1/3 of the top height. However if there are any plantation , which could not be, included in working plan of old teak plantation working circle, shall be delineated and thinned to 1/3 of the top height as per yield table.**

2.13.3.5. "D" Type of area :-

- (i) **Climbers of non medicinal value on the trees will be cut.**
- (ii) **All trees (teak and non teak) of approach class and above will be enumerated girth class wise.**
- (iii) **No tree will be marked for felling unless it is silviculturally available.**
- (iv) **Only estimated % of harvestable girth classes of teak and non teak trees preferably of coppice origin and that of harvestable girth and above will be marked for felling. Those harvestable teak trees, which are preventing the development of the seedling regeneration of the desired species, will be removed in preference to others. Otherwise felling of trees from these girth classes will be first from the highest girth class and then next below and so on. Due care should be taken to remove teak trees of coppice origin while retaining the teak trees of seedling origin as far as possible.**
- (v) **No tree species of edible fruit will be marked for felling.**

- (vi) Irrespective of girth classes all malformed and dead trees will be marked for felling, retaining two dead trees per hectare. To avoid the reckless felling, it is prescribed that malformed trees having straight clear bole exceeding 2.5 meters in height from the ground level will not be felled. A malformed tree is a tree with badly shaped and defective stems occupying more space than its future value warrants.
- (vii) The undesirable undergrowth of non medicinal value, which is preventing or likely to prevent the development of seedling regeneration of the desired species, will be removed.

2.13.4.1. MARKING RULES: - Marking, technique has been described, in detail, in the Other Important Regulations. Marking for different type of area will be as follows:

2.13.4.2. TYPE A: No marking will be done.

2.13.4.3. TYPE B:

- (i) All dead trees after retaining 2 trees per ha shall be marked for felling.
- (ii) All live high stumps to be cut as close to the ground as possible and dressed.
- (iii) Malformed seedlings to be cut back.
- (iv) If it is in the interest of crop, the coppice shoots will be removed. If not possible then established multiple coppice shoots and poles will be reduced to one per stool retaining the vigorous one.
- (v) The undesirable under-growth, which is preventing or likely to prevent the development of seedling regeneration of the desired species, will be removed.

2.13.4.4. TYPE C: The congested crop will be thinned to 1/3 of the top height of the crop. The plantation not included in old teak plantation working circles, shall be thinned as per Yield table.

2.13.4.5. TYPE D: As envisaged under treatment for "D" type of area the marking will be carried out accordingly.

SECTION: 2.14. METHODS OF REGENERATION:

2.14.1.1. "B2" type of areas if found will be planted with species suitable to site. If required seed sowing may be done of Khair and other species. This will be done in the year following the year of main felling. Approximately 25 ha. per felling series per year is estimated target.

SECTION: 2.15: SUBSIDIARY SILVICULTURAL OPERATIONS:

2.15.1.1. The following works will be carried out in the following year of the main felling and in the subsequent years:

2.15.1.2. CUTTING BACK OPERATIONS: These will be done in the following year of main felling. This will include following operations:

- i) Felling of standing trees, marked for felling but not felled.
- ii) Felling of damaged trees, damage caused during felling, which are not likely to be recovered.
- iii) Cutting of non medicinal climbers.
- iv) Cutting of all coppice shoots where natural regeneration is adequate.
- v) Cutting of all malformed regeneration upto 15cm g.b.h.

**2.15.1.2. CLEANING: In the sixth year from the year of the main felling, the following operations will be done.**

- i) Non medicinal climber cutting.**
- ii) Cutting of all coppice shoots where naturally regenerated or planted seedlings are adequate.**
- iii) Removal of non medicinal undergrowth interfering or likely to interfere with the growth of seedlings (natural or planted)**

**SECTION: 2.16: OTHER REGULATIONS:**

**2.16.1.1. The success of regeneration will depend upon the protection of all areas from fire and control on grazing. The vulnerable areas will be protected from illicit cutting also.**

**2.16.1.2. FIRE PROTECTION: Special attention is needed to control the fire. The main felling coupe will be rigidly and effectively fire protected for a period of 5 years from the year of main felling. The area will be cleared off, of all the dry and cut remains of bushes, leaves etc. by the end of February to avoid fire hazards to standing crop as well as to the NR. Effective protection against fire for a period between February 15 and June 15 is a must to ensure survival and establishment of NR of all species for developing it into the further growing stock. It is established fact that fire is the foremost reason of non establishment of natural regeneration. Grazing comes next. Co-operation of local people will be sought by forming JFMC's.**

**2.16.1.3. CLOSURE TO GRAZING: The main felling coupes will remain closed to grazing for a period of 5 years from the year of main felling. The closed coupes will specifically be mentioned in the grazing license and the villagers will be made aware of them by regular drum beating in the villages. The suggestion given in Other Important Regulations to solve the grazing problem should be tried.**

**2.16.1.4 PEPOLE'S PARTICIPATION: JFMCs shall be involved in all activities of the coupes including marking, harvesting, regeneration, protection etc. as per the Govt. resolution dated 25/4/2003 and 05/10/2011.**



CHAPTER - IIA

WORKING PLAN FOR IMPROVEMENT WORKING CIRCLE

SECTION: 1: GENERAL CONSTITUTION:

2A.1.1. The total area allotted to this working circle is 6476.90 ha. comprising of 39 compartments in two ranges. These areas were prescribed under SCI working circle during last working plan. Out of 50 coupes of 5 felling series to be worked, the information of the division reveals that only 10 coupes were worked during last plan period. The enumeration data to 2010-11 shows that the growing stock per ha. varies from 66 plants per ha. to 160 plants per ha. The average basal area of these 05 felling series is 2.51 sq.mt. The status of growing stock and basal area indicates that the area needs to be shifted from SCI working circle to IWC working circle. The aim is to improve the valuable growing stock and to maintain overall wealth of ecosystem.

The following table shows details of area of working circle:-

Table 2A.1  
Allotment of area

Sr. No.	Name of Range	Range Area	IWC Area	% wrt Range	% wrt Division
1	Amravati	10139.947	-	-	-
2	Chandur Rly.	11345.739	5322.151	46.90%	10.23%
3	Paratwada	8145.115	1154.749	14.17%	2.22%
4	Morshi	12201.235	-	-	-
5	Warud	10199.845	-	-	-
Total S.C.I. "A" Class		52031.881	6476.90	-	12.45%

SECTION: 2: GENERAL CHARACTER OF THE VEGETATION:

2A.2.1. In general, the forests of this working circle is of site quality IV. The predominant species is Teak whereas refractory patches it is Salai which grew almost pure. The common associates of Teak are Ain, Anjan, Lendia, Dhawda, Tiwas, Moyen, Phasi, Kakad, Khair, Moha, Dudhi, and Palas etc. Patches of Teak are observed on the moderate slopes; upper ridges are either under stocked or denuded at many places underlying rock was exposed. Density is generally 0.2 to 0.4. Bamboo is by and large absent. Natural regeneration of Teak is restricted only on gentle slopes where soil depth is good. In certain patches natural regeneration of Kalam, Dhawada, Bhira, Dudhi and Palas is abundant; stands are under stocked and stunted due to long dry spell and relatively low rainfall. In certain area obnoxious weeds like Raimunia (*Lantana camara*), Nirgudi (*Vitex negundo*), and Parijatak (*Nyctanthus arbortristis*) are common. Now a day's weeds like Tarota (*Cassia tora*) is also replaced by more menace causing shrubs like Rantulsi (*Hyptis suaveolens*) even Gajar gavat (*Parthenium hysterophorus*), These fast growing weeds grow much faster and hence replaces palatable grasses and other indigenous herbs and shrubs from the forest floors.

SECTION: 3: COMPARTMENTS AND FELLING SERIES:

2A.3.1. Total 39 Compartments have been allotted to this Working Circle. They area has been kept under 05 Felling Series having 10 Coupes in each of them. The compartment allotted to different felling series and their areas are shown as below.

Table No. 2A.2  
Compartments allotted to this Working Circle.

Sr. No.	Name of W.C.	Range	Name of F.S.	Total Area	Compt. No.	Total compt. No.
1	I.W.C.	Paratwada	Wishroli	1154.749	426 to 432	7
2	I.W.C.	Chandur Rly.	N.Chiroli	1188.157	297,298,300,301,312	5
3	I.W.C.	Chandur Rly.	Wadhona	1312.445	212 to 216,222,322,323,329 to 332	12
4	I.W.C.	Chandur Rly.	West Chirodi	1356.506	307,310,311,313,314	5
5	I.W.C.	Chandur Rly.	S.Chiroli	1465.043	299,302,304 to 306,309,315 to 318	10
I.W.C. Total				6476.90		39

SECTION: 4: BLOCKS AND COMPARTMENTS

2A.4.1. **Area allotted to Working Circle is distributed in two ranges. The area of the compartments and site quality of the crop is given in Appendix No. LX of volume II of this plan.**

SECTION: 5: SPECIAL OBJECTS OF MANAGEMENT:

2A.5.1. **The special objects of management of the forests are:**

**i) To increase the proportion of valuable species in the growing stock and the condition of the growing stock by appropriate tending.**

**ii) To preserve and improve the composition and density of the crop.**

**iii) To check the soil erosion by creating and maintaining the vegetative cover.**

SECTION: 6: ANALYSIS AND VALUATION OF THE CROP.

2A.6.1. Age: - **The crop is generally young to middle aged. The crop is malformed also.**

2A.6.2. Stock Mapping: - **Existing stock maps are updated.**

2A.6.3. Density: - **The crown density is generally less than 0.4. However density more than 0.4 is observed in some patches. But such patches are few as the crop is young to middle age have smaller crowns, hence the density is less. Site quality is IV.**

2A.6.4. Enumerations: - **The detailed results of enumeration are given in the Appendix No. LX of Volume II of this plan. The comparative statement of tree numbers in various girth classes in last plan and current plan is given below.**

Table No.2A.3  
Table Showing the comparative Statement of  
Numbers of Tress per Ha.

Girth Class	2001-02			2010-11			Basal Area
	Teak	Non-Teak	Total	Teak	Non-Teak	Total	
<b>16-30</b>	<b>84.37</b>	<b>154.07</b>	238.44	<b>10.74</b>	<b>36.04</b>	46.79	<b>0.1886</b>
<b>31-45</b>	<b>44.74</b>	<b>75.26</b>	120.00	<b>11.13</b>	<b>25.68</b>	36.82	<b>0.4122</b>
<b>46-60</b>	<b>14.96</b>	<b>23.52</b>	38.48	<b>5.62</b>	<b>16.75</b>	22.38	<b>0.4911</b>
<b>61-75</b>	<b>7.00</b>	<b>20.81</b>	27.81	<b>3.26</b>	<b>10.93</b>	14.19	<b>0.5146</b>
<b>76-90</b>	<b>2.85</b>	<b>9.63</b>	12.48	<b>3.33</b>	<b>3.37</b>	6.70	<b>0.3629</b>
<b>91-105</b>	<b>1.96</b>	<b>8.04</b>	10.00	<b>1.74</b>	<b>1.96</b>	3.70	<b>0.2799</b>
<b>106-120</b>	<b>1.00</b>	<b>3.56</b>	4.56	<b>0.99</b>	<b>0.83</b>	1.83	<b>0.1839</b>
<b>121-135</b>	<b>0.30</b>	<b>1.07</b>	1.37	<b>0.03</b>	<b>0.14</b>	0.16	<b>0.0212</b>
<b>136-150</b>	<b>0.15</b>	<b>0.85</b>	1.00	<b>0.01</b>	<b>0.13</b>	0.14	<b>0.0224</b>
<b>150above</b>	<b>0.00</b>	<b>0.00</b>	0.00	<b>0.03</b>	<b>0.14</b>	0.17	<b>0.0338</b>
Total	157.33	296.81	454.14	36.89	95.97	132.86	2.5106

2A.6.5. Analysis of the Crop: - **Enumeration data and basal area shows that area is not fit to continue in SCI working circle. Therefore it is prescribed in IWC working circle,**

SECTION: 7: SILVICULTURAL SYSTEM:

2A.7.1. **The growing stock consists of Teak and other miscellaneous species. Very few matured trees are available for harvesting. Hence there is a need to reserve all the trees of higher girth classes as a seed source and till the trees of lower girth classes graduated into higher girth classes, since almost half of the area is open, good regeneration of Teak and other valuable species can be expected if the area is well protected. Only marking for Improvement of the crop shall be carried out.**

SECTION 8: ROTATION:

2A.8.1. **Since only improvement felling are to be carried out, therefore there is no need for fixing the harvestable girth. Improvement felling is recommended to open the canopy, if required.**

SECTION 9: FELLING CYCLE

2A.9.1. **Felling cycle is fixed as 10 years.**

SECTION 10: AGENCY OF HARVESTING:

2A.10.1. **The coupes shall be worked by FLCS/JFMC/Departmentally.**

## SECTION 11: REGULATION OF YIELD

2A.11.1. **As the felling is meant for improvement of the crop, yield regulation is not prescribed.**

## SECTION 12: SEQUENCE OF FELLING:

2A.12.1. **The sequence of felling of coupes is given in the App. No.XL of volume II.**

## SECTION 13: DEMARCATION OF COUPES, PREPARATION OF TREATMENT MAP, TREATMENT PROPOSED AND MARKING RULES

2A.13.1. Demarcation of Coupes: **The main coupe shall be demarcated one year in advance of working.**

2A.13.2. Preparation of Treatment Map: **It will be prepared by RFO and verified by ACF. Treatment map will be prepared on graph paper in 1:5000 scale. Laying of grids in B, C and D type areas shall be done after classifying areas into various treatment types. In B, C, D areas grids of 1 ha size shall be laid. The base line should as far as possible run through center of coupe. The trace of the coupe map will show the contours along with important features like *nala*, streams, old plantation, etc., the area will be classified as follows:**

1. Type 'A'- Protection Areas: **The area consisting of patches over 25° slope or more (A1); 20 meter strip on both sides of the rivers or *nalas* (A2) and erosion prone areas (A3).**

2. Type 'B'- Under stocked Areas: **Blanks and under stocked patches (density below 0.4) exceeding 2 hectare in extent. The area will be further divided into two classes:**

**Type - B1: Areas having adequate rootstock (400 or more per hectare)**

**Type - B2: Areas having inadequate rootstock.**

3. Type 'C'-Old Plantations and Groups of Young Poles: **This will include patches of well-grown poles suitable for retention as future crop in addition to old plantations. The patch should not be less than one ha in extent.**

4. Type 'D' -Well Stocked Areas: **This will include areas with crop density more than 0.4.**

2A.13.3. Treatments Proposed: **The various treatments proposed are as under:**

1. Type Area 'A':

(i) **The soil and moisture conservation treatment shall be carried out as given in Miscellaneous Regulation.**

(ii) **No tree of any kind is permitted to fell.**

2. Type Area 'B':

(i) **The Soil and Moisture Conservation treatment shall be carried out as given in Miscellaneous Regulation.**

(ii) **In B1 areas, rootstock management as given in Miscellaneous Regulations shall be carried out.**

(iii) **In B2 areas, plantation of *Teak*, *Anjan* and miscellaneous species at prescribed spacing shall be carried out on suitable sites in the year after main felling. It means PPO/PYO works will be taken up during the year of main felling.**

3. Type Area 'C': **This area does not need any planting. But the crop is tended to provide a spacing of 1/3<sup>rd</sup> height of the trees to be retained.**

4. Type Area 'D': **This area does not need any planting.**

#### 2A.13.4. Marking Technique and Marking Rules:

(a) **Marking Technique: All trees such as dead and diseased, live high stump, singling of coppice shoot and trees hampering the growth of valuable species will be marked for felling. In remarks column of marking register, reasons for marking be recorded. Marking technique has been discussed in the chapter "Miscellaneous Regulations". Marking should be done with a view to improve the existing crop and no revenue felling be carried out. Improvement felling is to be carried out for removal inferior growing stock in the interest of better growth of more valuable individuals.**

(b) **Marking Rules: Marking will be undertaken one year in advance and will be carried out by R.F.O. It will be verified by ACF. The following marking rules are laid down.**

1. Type 'A' Area: **No marking will be carried out.**

2. Type 'B' Area:

- (i) **All dead trees, after retaining 2 dead trees per ha, shall be marked for felling.**
- (ii) **All live high stumps shall be cut as close to the ground as far as possible and dressed.**
- (iii) **The established multiple coppice shoots will be reduced to one per stool retaining the vigorous one, which is closer to the ground.**
- (iv) **The undesirable under growth, which is preventing growth of natural regeneration of desired species, will be removed.**

3. Type 'C' Area:

**Thinning shall be carried out in these areas by providing a spacing of 1/3 rd height of trees retained.**

4. Type 'D' Area:

- i) **All dead trees , after retaining 2 dead trees /ha , all live high stumps and all except one vigorously growing coppice shoot per stool will be marked for felling.**
- ii) **Thinning marking will be carried out in favour of teak and other valuable species**
- iii) **No fruit bearing tree shall be marked for felling.**

#### SECTION 14: SUBSIDIARY SILVICULTURAL OPERATIONS:

##### 2A.14.1. Cut Back Operations (CBO):

**It shall be taken up in the immediate year of main felling.**

- i) **All standing trees marked for felling but not felled shall be felled.**
- ii) **All damaged trees, which are not likely to recover, shall be cut back.**
- iii) **All climbers, except of NTFP importance, in the plantation area shall be cut.**
- iv) **All suppressed or damaged advance growth of *Teak* up to 30cm girth shall be cut to ground level to obtain good coppice.**

##### 2A.14.2. Cleaning:

**In the 6<sup>th</sup> year commencing from main felling following operation shall be carried out:**

- i) **All climbers, except of NTFP importance, will be cut.**
- ii) **Weeds interfering or likely to interfere with the reproduction of Teak and other valuable species will be cut and removed.**
- iii) **Coppice shoots of Teak will be removed if NR and AR are successful, otherwise shoots will be cut and reduced to one well grown shoot.**
- iv) **The established advanced growth of Teak and other valuable species will be spaced out suitably.**

### 2A.14.3. Thinning

**Thinning will be carried out in the 11<sup>th</sup> year.**

- i) All climbers, except of NTFP importance, shall be cut.**
- ii) All dead, badly damaged or uprooted trees shall be felled.**
- iii) In groups of young pole crop of Teak, thinning shall be carried out so that the average spacing between poles to be left shall be 1/3 rd of the height of the trees retained.**
- iv) Weeds interfering or likely to interfere with the reproduction of Teak and other valuable species will be cut back.**
- v) No trees of gbh above 60 cm. shall be thinned.**

**A statement showing the sequence of CBO, Cleaning and Thinning is given in Appendix No. XLI of Volume II.**

### SECTION 15: REGENERATION:

**2A.15.1. Natural Regeneration: The natural regeneration will be protected against fire and animals. TCM or other kind of fencing may be established. Root stock management and tending of natural regeneration shall be carried out in B1 areas.**

**2A.15.2. Artificial Regeneration: Artificial regeneration shall be carried out in B2 areas in next year of main felling. It means PPO/PYO works will be taken up in the year of main felling. The choice of species will be Teak, Anjan, Air, Khair, Shiwan, Dhaora, Salai, Bhilawa etc. and other fruit trees. Preference to given to the local indigenous species. Approximately 25 ha. per felling series per year is estimated.**

**2A.15.3. Method of Planting:**

**The planting model approved by the competent authority will be implemented**

**2A.15.4. Pre-Planting and Planting Operations:**

**The pre-planting and planting operations as approved by the competent authority shall be carried out.**

### SECTION 16: OTHER REGULATIONS

**2A.16.1. Protection from Fire: Main-felling coupes will be fire traced and rigidly fire protected for a period of Five years from the year of felling. In the month of October / November after the demarcation is over all the undergrowth of lantana will be uprooted. The cut material will be spread over the area to be planted in such a way that the cut material remains sufficiently away from the stems of the trees and burning do not harm the trees. The dry and cut bushes of unwanted species shall be burnt before the end of February to avoid fire hazards to the forests.**

**2A.16.2. The natural regeneration needs to be protected from the hazards of fire so that the regeneration becomes future growing stock. Hence the main thrust should be on protection of regeneration.**

**2A.16.3. To ensure effective protection from fire the workable schemes of fire protection should be carried out in which the due share to people's participation shall be given. For meaningful participation modalities shall be worked out to impart benefit to the people so that they come forward. The JFM committees will be formed and fire protection will be done through it.**

**2A.16.4. The techniques of fire protection should be as per the paragraphs given in Miscellaneous Regulations.**

2A.16.5. **The comprehensive Fire Fighting Scheme should be chalked out so that effective Fire Fighting force is created for the period 15<sup>th</sup> February to 15<sup>th</sup> June on 24 hour duty on suitable area basis.**

2A.16.6. **Guidelines For The Rootstock Management: In view of tending the available natural rootstock to grow as a prominent constituent of the future crop, the rootstock management guidelines are prescribed, as follows.**

(a) **Singling of coppice shoots: One healthy and promising coppice shoot will be retained on the stump and the rest be removed. However, coppice shoots interfering with promising saplings of seed origin should be removed. Such coppice shoots should also be close enough to the ground so that it would not topple after gaining volume and weight and would be able to develop root system of its own subsequently.**

(b) **Coppice management of damaged saplings: The saplings and poles of up to 30 cm GBH having one third of the stem damaged shall be coppiced by cutting flush to the ground. Such coppicing, however, should not expose the ground, cause erosion and lead to soil loss.**

(c) **Tending of natural regeneration: All seedlings and saplings of valuable species more than 60 centimeters in height will be tended to leave nearly 400 saplings/seedlings per hectare at an average of 5 meter spacing. The natural regeneration present shall be assisted and encouraged. Order of priority among desirable species for retention is prescribed as: *Anjan, Aonla, Bhilawa, Kusum, Shisham, Shivan, Ahl, Salai, Charoli, Khair, Bel, Behada, Sajad, Tendu, Dhaora, Teak and Lendia.***

2A.16.7. **Grazing Control: - The areas of main felling shall remain closed to grazing for a period of 5 years. Further, in the area of adjoining but with sufficient lag for working of coupe, seeds of palatable grasses be sown and villagers be motivated to harvest the fodder. The method of rotational grazing shall be followed. This will facilitate opening of area on rotational basis. The closed areas should be specifically mentioned in the grazing licenses and villagers be communicated of such closures by suitable means such as drum-beating, notices on prominent places, village Panchayat officers etc. and by binding grass pullies or stacks along the boundaries of closed coupes.**

2A.16.8. **Soil Conservation Works: CCT/ DCT, WATs, Gully plugging and nala bunding works will be taken up. Cement plugs or earthen *bandhara* be taken up on a large scale to preserve moisture for a longer period simultaneously the catchments areas of the cement plugs/ earthen *bandhara* be treated with loose boulder structures so as to prevent siltation in the dams. In addition to this contour stone bunding 60 cm x 30 cm size will be taken up on the slopes to prevent soil erosion, where boulders are not available agave suckers in 2 rows will be planted.**

2A.16.9. **People's Participation: The people's participation is the need of the hour, to protect the forest from fire, grazing, illicit cutting etc. Unless the villagers living nearby are made aware of the material benefit from the forest, they would not feel associated with the well being of the forest and may not visualize the distinct valuable utility of forests for their material benefit they get or likely to get. Therefore, it should be expedited through different measures as listed below**

1. **Raising awareness about natural benefits of the forests for providing them water for agriculture and drinking water and providing fodder for their milch cattle.**

2. **Providing regular employment to the JFM members on preference basis as they associate themselves in protection, development and regeneration of forests.**

3. **By protecting and managing forests JFM members are benefitted by providing fodder, fuel wood and small timber.**

4. **By sharing revenue to JFMCs.**



## CHAPTER-III

### WORKING PLAN FOR AFFORESTATION WORKING CIRCLE

#### INTRODUCTION:-

Forest areas which are degraded under stocked and with blank patches are included in this working circle. It appears to be difficult to regenerate the areas and bring them into form in which it existed in the past. The existing vegetation of these area is due to various adverse factors, such as infertile soil and biotic interference. The afforestation technique and selection of species should be carried out to the potentiality of the site depending on the factors such as soil, rainfall, biotic interference. Soil and moisture conservation work along with effective protection of soil/area are necessary for the success of afforestation areas. Plantation model may be on these lines. Soil and moisture conservation work such as gully plugging, nala bunding, cement bands, earthen dam, anicut, KT ware etc. required to be taken up at suitable sites. The working circle includes 21248.315 ha. forest area. In general areas having density less than 0.2 are included in this working circle.

#### SECTION: 3.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

##### 3.1.1.1. The following categories of area included in this working circle.

- (i) Areas of afforestation working circle of previous plan.
- (ii) Areas raised under compensatory afforestation.

##### 3.1.1.2. Range wise distribution is as under:-

Table No.3.1

Sr. No.	Range	Range Area	No. of Comptt.	RF "A" Class	RF "C" Class	P.F	U.F	Total Area Allotted to AWC
1	Amravati	10139.947	44	0	3547.086	0	19.8	3566.886
2	Chandur Rly	11345.739	65	121.689	4347.802	0	8.23	4477.721
3	Paratwada	8145.115	44	424.203	3860.351	0	28.5	4313.054
4	Morshi	12201.235	117	588.565	5071.846	4.94	99.37	5764.721
5	Warud	10199.845	75	0	3097.993	0	27.94	3125.933
Total		52031.881	345	1134.457	19925.078	4.94	183.84	21248.315

Area will be divided into 17 Afforestation working series, each having 10 annual coupes. The detail of the coupes and their sequence is given in Appendix No. XL in Vol.-II of this plan.

#### SECTION: 3.2: GENERAL CHARACTER OF THE VEGETATION:

3.2.1.1. Forests included in this working circle are mostly Reserved Forest of "A" and "C" class and un classed Forests. Most of the areas are close to heavily habitated villages. Out of these areas, some of the areas have been already covered under plantation in previous plan period under different schemes. Main vegetation is Teak (*Tectona grandis*), Bamboo (*Dendrocalamus strictus*), and Khair (*Acacia catechu*) etc. are found. Under storey or ground vegetation are almost absent.

3.2.1.2. **The areas, which are in the immediate vicinity of human habitations, are under tremendous biotic pressure. Heavy grazing has resulted into compaction and erosion of soil. Due to this many patches have become almost blank. However, in some patches very good miscellaneous crop of 0.4 density is noticed. Common species found in such patches are Bhirra, Dhawada, Ain, Tiwas, Lendia, Mowai, Haldu, Tendu and Palas.**

SECTION: 3. 3: BLOCKS AND COMPARTMENTS:

3.3.1.1. **The details of compartments allotted to this working circle by coupes and working series have been given in Appendix No. XXXVI.**

**Number of "A" and "C" Class RF compartments = 345.**

SECTION: 3.4: SPECIAL OBJECTS OF MANAGEMENT:

3.4.1.1. **These areas have degraded due to heavy grazing, illicit cutting and fire. Keeping in view these factors, special objects of management for these areas are as follows:-**

- (i) To reclaim the area by afforestation/plantation works.**
- (ii) To improve crop quality and composition so as to increase the productivity.**
- (iii) To provide means of livelihood to the local people through employment for plantation and protection.**

SECTION: 3. 5: ANALYSIS AND VALUATION OF THE CROP:

3.5.1.1. **STOCK MAPS: Most of the areas are sparsely stocked or blanks. Stock mapping is carried out by the local field staff.**

3.5.1.2. **DENSITY: The density of the crop is below 0.4 marked with some patches blank, except in few patches where density is more than 0.4.**

3.5.1.3. **ENUMERATION: Enumeration shows that most of the areas are under stocked. Most of species exists are of inferior quality. The enumeration result is given in Chapter VI and in Appendix No. XXXIV.**

SECTION: 3.6: SILVICULTURAL SYSTEM:

3.6.1.1. **The primary object of management in these areas is to restore the soil fertility and increase the productivity. The areas will be afforested with suitable species. No regular silvicultural system will be applied. The existing growth will be tended by suitable operations. The root stocks present in the area which have been constantly hacked for firewood will be redressed properly to obtain coppice growth. The constraints for the establishment of seedlings in these areas are insufficient subsoil moisture, compact soil, and heavy biotic pressure. Top soil in the majority of the area is washed away, therefore suitable soil and moisture conservation works are prescribed to restore the soil for good tree growth. Suitable areas with deep soil will be selected for effective planting with protection measures. Cooperation of the local people will be sought in management of the plantation through Joint Forest Management Committees.**

SECTION: 3.7: CHOICE OF SPECIES:

3.7.1.1. **The choice of species will depend upon soil type, its depth, drainage. However, local species of small timber, firewood and fodder will be preferred. In areas suitable for Teak, 50% Teak and 25% indigenous edible fruit and flower yielding trees of economic importance like Sitaphal, Amla, Biba, Hirda, Beheda Chinch, Kavati, Char, Jamun, Bor, Karvand will be planted. Ficus species may be planted at the rate of two trees per ha for wildlife. Bamboo may be planted in suitable areas. Where the local requirement is for fuel species like Babul, Garadi, and Neem should be considered. Other areas 75% afforestation species with preference to local species and 25% fruit trees will be planted. List of plantations taken up in the past given in Appendix No. XXIX and XXX.**

3.7.1.2. REGULATION OF YIELD.

3.7.1.3. WORKING CYCLE: **10 years.**

3.7.1.4. YIELD CALCULATION: **No yield is expected.**

3.8.1. AGENCY FOR WORKING:

3.8.1.1. **The planting works will be carried out through JFMCs. Whenever the work is carried out by JFMC overall technical inputs and supervision will be by the department. Joint Forest Management committee may take up (i) Nursery (ii) Plantation (iii) Protection works, especially protection from grazing and fire. In absence of JFMC works will be carried out departmentally.**

SECTION: 3.9: DEMARCATION OF COUPE, PREPARATION OF TREATMENT MAP AND MARKING RULES:

3.9.1.1. DEMARCATION: - **Coupes will be demarcated in the year of working as per schedule given in Valhi.**

3.9.1.2. TREATMENT MAP: - **Basic treatment map will be prepared by RFO and it shall be verified by ACF with an emphasis for suitability of site for plantation and regeneration areas.**

3.9.1.3. TREATMENT: - **The various treatments proposed are as under.**

3.9.1.4. **Area with steep slopes i.e. more than 25°, thirty meters wide strip on either side of the water course, and area susceptible to excessive soil erosion only suitable SMC works will be carried out as given in the chapter of Miscellaneous regulations.**

**In Under stocked Area measures will be taken to increase the density of the area naturally and artificially. For this purpose rooted stock will be tended, seeds of suitable species like Neem and Chandan will be sown in bushes through Vansevak and baramahi labourers available in the beat. Forest Beat Guard should collect seeds local species and sow it in bushes and degraded areas at the outset of monsoon. RFO/Forester shall monitor and record seeds collected/sown by Forest Guards. Suitable area will be planted with species as given in para 3.7.1.1. Singling will be done wherever needed.**

3.10. MARKING TECHNIQUE AND RULES: - **No marking.**

SECTION: 3.11: REGENERATION:

**Forests are regenerated in following ways,**

**1) By Natural Regeneration.**

**2) By Artificial Regeneration.**

**3) Natural Regeneration assisted by artificial methods or a combination of both.**

1) **Natural Regeneration - Natural Regeneration occurs in forests as seeds fall and germinates under favorable conditions in course of time and seedlings got established and get converted into trees. By far is the only method till the interference by the human. Natural regeneration in the forests is affected by fire, rains, insects, rodents, animals, weeds and other biotic interferences.**

**It is found that most of the area is invaded by weeds such as Lantana, Palas and Rantulsi almost completely thereby affecting natural regeneration. Fire and grazing are the other main causes due to which natural regeneration is poor.**

**In these forests natural regeneration of Teak and other important species though found in some patches dies before getting established due to compact soil, bad drainage, poor aeration, biotic factors.**

2) Artificial Regeneration – Forest species can be raised by sowing, planting or other artificial methods. Wherever natural regeneration is inadequate the area needs to be covered up by artificial regeneration. The choice of species and number of plants will depend upon the site suitability.

The site specific plantation model will be finalized by ACF. JFM committee may be involved in Afforestation work. Soon after the receipt of approved treatment map, a detailed treatment map for planting in suitable area will be prepared by the RFO under the guidance of an ACF.

The planting will be taken in the next year of main working. Seeds used for raising nursery should be collected from the known sources or purchased from FDCM. Seeds used should be of genetically superior quality.

For grass development area will be ploughed and sown with seeds of grasses like Paonia, Marvel, Sheda and other suitable species. In bushes seeds of Neem and Chandan will be sown before onset of monsoon.

3.11.1. The artificial regeneration in suitable areas may be restored. Where replanting is resorted to in the same area it should be ascertained that the factors responsible for failure of plantation be removed before taking plantations. If these factors are not removed no plantation be taken up instead complete protection of the area may be carried by employing all measures. Mainly the reasons for failure are excessive grazing, wrong choice of species, and poor soil depth. Natural regeneration through coppice and natural seedling will be treated as supplementary to artificial regeneration and will be properly tended.

3.11.2. COPPICING: High stumps will be dressed at 10 to 15 centimeter height above the ground with a sharp axe.

#### SECTION: 3.12: SOIL AND MOISTURE CONSERVATION:

3.12.1. Considering the present degraded area in the working circle soil and moisture conservation works become utmost necessary to restore moisture regime. Therefore in each coupe soil and moisture conservation works needs to be carried out compulsorily. Accordingly area of 25 ha. per coupe per working series will be the annual target. In selecting SMC works the preference will be gully plugging, CCT/DCT, nala bunding, vantalao, earthen dams, anicut, KT ware and cement bandh as per site requirement and "Ridge to Valley" concept of water shed management be followed. Seed sowing, Bamboo rhizome and Agave planting is mandatory on the loose soil of SMC works and will be carried out by Round Officer and his subordinates regularly.

#### SECTION: 3.13: SUBSIDIARY SILVICULTURAL OPERATIONS:

3.13.1. The following works will be carried out in the next year of main working and in the subsequent years.

3.13.2. CUTTING BACK OPERATION.

- (i) All live high stumps marked for felling but not felled will be felled.
- (ii) All climbers will be cut.
- (iii) Dressing of stumps will be done.
- (iv) All multiple coppice shoot shall be reduced one per stool retaining the most promising one.

3.13.3. THINNING: In planted areas silvicultural thinning may be carried out as per schedule mentioned in the plantation scheme or at 10 year interval for non-teak species and 5 years for teak.

SECTION: 3.14: OTHER REGULATIONS

3.14.1. FIRE PROTECTION: **Main working coupes will be rigidly fire protected. All plantations will be fire protected from fire for 5 years. The local JFM committee may be assigned this work.**

3.14.2. GRAZING: **Areas of main working coupes in which plantation is carried out and wherever natural regeneration is tended will be remain closed to grazing for a period of five years from the year of planting.**

3.14.3.: PEOPLES PARTICIPATION: **Joint Forest Management Committee shall be formed in the villages adjoining the coupe and the cooperation of the members of this committee shall be sought in protection of the forests and forest area. Without cooperation of the local people it will not be possible to raise successful plantations. To raise plantations of fire wood, small timber and grass suitability of the site, needs of the local people and level of their cooperation must be kept in mind and necessary awareness for this should be created by using various audio visual methods and publications.**



## CHAPTER – IV

### WORKING PLAN FOR PROTECTION WORKING CIRCLE

#### SECTION: 4.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

4.1.1. This working circle includes the area belonging to the precipitous slopes of Hattighat reserve, which is the part of Gavilgarh hill ranges falling in Paratwada Range. This area is prone to erosion and under heavy biotic pressure. These precipitous slopes are the origin of the many water courses later on they become nala which are tributaries of the river Sapan and Purna the main rivers of the area. The elevation difference is almost 250 to 300 within a compartment. Therefore this area needs to be tackled with effective measures to stop erosion.

Table 4.1

Sr. No	Range	Total area of the Range	Area of the Working Circle	% area w.r.t. to Division
1	Paratwada	8145.115	1223.023	15%

#### SECTION: 4.2: GENERAL CHARACTER OF VEGETATION:

4.2.1. The site quality of the forest of this working circle is IV. In the last working plan this area was included in the pasture working circle. The crown density is well below 0.4. Teak (*Tectona grandis*) is the dominant species; other species are Salai (*Boswellia serrata*), Mowai (*Lannea coromandelica*), Tiwas (*Ougeinia ogeinensis*), Kumbhi (*Careya arborea*), Lendia (*Lagerstromia parviflora*), Palas (*Butea monosperma*), Amaltas (*Cassia fistula*), and Girguti (*Flaucortia indica*). Area is densely occupied by the shrub Raimunia (*Lantana camara*) other shrubs are Bhandar (*Colobrookia oppositifolia*), Kali Bhandar (*Pogostemon benghalensis*) Nirgudi (*Vitex negundo*) and Tarota (*Cassia tora*). Main grass species are Kusal (*Heteropogon Contortis*), Pochati (*Apluda mutica*), Gondel (*Themada triandra*), Marvel (*Dicanthium annulatum*) etc. obnoxious species like *Parthenium hysterophorus* and *Argemona mexicana* invaded the area.

#### SECTION: 4.3: SPECIAL OBJECTS OF MANAGEMENT:

4.3.1. The area allotted to working circle serve as the origin of many important water courses traversing the outskirts of Melghat area. There is a need to conserve these forests for indirect benefits as well as to prevent from of the denudation. Hence the special objectives of the management are as given below:-

1. To preserve and improve the existing growing stock in these vulnerable area.
2. To preserve the habitat in its undisturbed form.
3. To implement soil moisture conservation works for protection of area from erosion and denudation.

#### SECTION: 4.4: ANALYSIS AND VALUATION OF THE CROP:

4.4.1. The density of the stocking is poor. Existing vegetation is in bad shape because of heavy lopping for fuel wood and fodder. Regeneration is scanty because of biotic pressure. Under growth is mostly of Lantana, Grass is mostly Kusal and Pochati. Associates of Teak are Salai, Mowai, Haldu, Ain and Tiwas are present. Stock mapping of this area is done by the local staff of Paratwada Range. Thorny species like Chilati, Hiwar, Bharati and Thor also invaded the area.

SECTION: 4.5. : COMPARTMENTS AND WORKING SERIES:

4.5.1. **The area allotted to Protection Working Circle constituted in one working series is given below.**

Table 4.2  
Table Showing Compartment allotted to Working Circle.

Sr. No	Working Series	Compartment	No.	Area in Ha.
1	Hattighat	407 to 411, 413 to 416	9	1223.023

SECTION: 4.6. : SILVICULTURAL SYSTEM:

4.6.1. **No felling is prescribed. Only planting suitable patches and seed sowing of local species prescribed. Soil and moisture conservation works need to carried out every year on 120 ha.**

SECTION: 4.7. : WORKING CYCLE

4.6.1. **The working cycle is fixed for 10 years.**

SECTION: 4.8. : REGULATION OF YIELD:

4.6.1. **No yield. No regulation.**

SECTION: 4.9. : AGENCY FOR HARVESTING:

4.9.1. **No Harvesting.**

SECTION: 4.10. : TREATMENT PROPOSED:

4.10.1. **The main object of the Management is to maintain and improve the adequate vegetative cover and to preserve the soil in the slopes. No removal of any kind is prescribed. Artificial regeneration is prescribed. Collection of minor forest produce like Mahua flowers, Char and Tendu leaves etc. is permitted to the local tribes and villagers.**

4.10.2. **The forests under this working circle need special treatment in the form of soil and moisture conservation works. Since the slope is steep, no CCT or DCT is stipulated. To check the soil erosion, vegetal cover of the tract is to be increased through bush sowing and dibbling of Lendia, Kusum, Bhirra seeds in the under stocked and blank forests areas. It shall be carried out on regular basis through the concerned "Vansewak", Beat Officer. Where soil depth is poor, grass seeds shall be broadcasted, followed by closure for grazing. The closure of the area is proposed through barbed wire fencing. The work may be distributed over period of working cycle i.e. 10 years. Nala bands in series and Gully plugging is prescribed. Water storage tanks on the down side of hill are proposed depending on the suitability of site.**



## CHAPTER – V

### WORKING PLAN FOR THE BABUL BAN WORKING CIRCLE

#### SECTION: 5.1. GENERAL CONSTITUTION:

**This Working Circle includes all the Babul Bans of Amravati Forest Division. Babul Bans exists in all five Ranges of this division. Total number of compartments are 483 and the area 4025.884 Ha.**

Table 5.1  
Table showing the details of the area of this Working Circle.

Sr. No.	Name of Range	Range Area	“A” Class Babul Ban	% wrt	% wrt	No. of Comptt.
				Range	W.C.	
1	Amravati	10139.947	1236.862	12.20	30.72	109
2	Chandur Rly.	11345.739	209.175	1.84	5.20	26
3	Paratwada	8145.115	458.022	5.62	11.38	81
4	Morshi	12201.235	2000.393	16.40	49.69	237
5	Warud	10199.845	121.432	1.19	3.02	30
Total		52031.881	4025.884	-	100	483

#### SECTION: 5.2. GENERAL CHARACTERS OF VEGETATION

**Babul (*Acacia nilotica*) is a strong light demander species and it does not tolerate shade. In many places it occurs in pure patches. However at some places it is found with other species. *Prosopis*, *Neem*, *Palas*, *Huvar* are the other main species. The under growth generally consists of *Chilati*, *Khair*, *Ber*, *Nirgudi* and *Hinganbet* etc. Most of the area is flat and contains deep black and red soils. In the patches where the growth is good representing young to mature trees of Babul. In some of the area natural regeneration of Babul is also observed but it is very sparse. In many patches Babul forests are under stocked and tend towards scrub forests. Due to scattered nature of forest and proximity to villages these areas are under excessive biotic pressure and illicit felling results in degradation. More over the scientific management of these forests has been discontinued since 1974-75. Since then no attempts were made to regenerate the Babul Ban. In many areas Babul is being replaced by *Prosopis juliflora*.**

#### SECTION: 5.3. SPECIAL OBJECTS OF MANAGEMENT

**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 in particular.**
- (ii) **To reclaim exposed soil through intensive soil and moisture conservation measures.**
- (iii) **To raise Babul plantation in the area.**

#### SECTION: 5.4. ANALYSIS AND VALUTION OF THE CROP

Area of this working circle was included in Afforestation Working circle of previous working plan. Sampling of regeneration survey and growing stock is carried out by FRSS unit of Working Plan for the area falling in Afforestation Working circle. The Data analysis carried out with the help of Chief Statistician Maharashtra State, Nagpur. The result of growing stock reveals that the forests are under stocked and have shrubby growth except in few patches where matured Babul trees exists. The details of enumeration is shown in para 6.2.1.6 of part- I

#### SECTION: 5.5. SILVICULTUREAL SYSTEM/METHOD OF TREATMENT

Babul regeneration comes up very well but due to biotic pressure it fails to grow and establish. In most of the area of Babulbans biotic pressure is heavy. More over it is not a very good coppicer. In the past Babul plantations were raised by clear felling the area and seed sowing after ploughing the area and by agri-silvi method but now a day's such practice is stopped and not recommended after the Hon'ble Supreme Court decisions and Forest Conservation Act 1980. Hence it is prescribed to raise Babul plantation in open patches.

#### SECTION: 5.6. FORMATION OF WORKING SERIES AND COUPES

Formation of working series and coupes are given in Appendix No.XL of volume II.

#### SECTION: 5.7. CHOICE OF SPECIES

The main species of the crop is Babul. There are three main varieties of Babul viz. Telia, Kauria and Ramkathi. The Ramkathi variety is easily distinguished by its broom like appearance and its cupressiform branches. This variety grows faster but, occurs in sporadic form in forest and shows marked preference for cultivation and may be neglected. There is also a certain amount of religious prejudice against felling it and utilizing its timber. There are marked distinguishing features between telia and kauria variety. Telia's bark is relatively smooth and lightly cracked and for kauria bark is rough and fissured. Telia color of shoots is bright brown while that of kauria is grey. Spines of telia are short, slender and few whereas that of kauria are long, stouter and numerous. Pods of telia are moniliform whereas in case of kauria it is flat but little constricted between seeds.

Both the varieties prefer deep moist soil. Telia variety grows faster and is also the longer lived of the two. Both the varieties avoid localities with much soda efflorescence.

Considering economic value telia variety is regarded as much superior for purposes of timber and its wood is compact, closed grained, durable and seasons well. Kauria timber is coarse, brittle and seasons badly, cracking a good deal during the process and is rarely used. Fuel value of both is almost the same.

*Acacia arabica* is a strong light demander and does not tolerate suppression. Coppice shoots do not develop well. Tree is attacked by beetle *Celosterna scabrata* and the fungus *Fomes papianus*, Kauria variety being more susceptible to the attack. Majority of the babul crop consists of Kauria variety, its seeds being distributed by floods along streams.

Regeneration is done artificially. The area is ploughed. Seeds of Babul are sown in lines 5 meter apart.

Growth of Babul is good in deep black soil and well drained alluvium along river and nala banks, fair on light black soil and poor on shallow and hard soils. Trees grown on such soils are usually stunted and rarely exceed height of 20 feet. For the poor dry soils *Neem* so far appears to be the best. It germinates well, grows quite fast, and its wood is equally hard and valuable as that of Babul.

Babul forests occur almost pure. However, at places species like;

*Apta (Bauhinia racemosa)*, *Ahl (Morinda tinctoria)*, *Amaltas (Cassia fistula)*, *Behada (Terminalia bellerica)*, *Chandan (Santalum album)*, *Ghont (Zizyphus xylopyra)*, *Lasora/Bhokar (Cordia myxa)*, *Umar (Ficus glomerata)*, *Chinch (Tamrindus indica)*, *Jamun (Eugenia jambolana)* along nala banks, *Kawit (Feronia elephantum)*, *Katbor (Canthium parviflorum)*, *Kalam (Stephegyne parvifolia)*, *Kahu or Arjun (Terminalia arjuna)*, *Lendia (Lagerstroemia parviflora)*, *Maharukh (Ailanthus excelsa)*, *Palas (Butea monosperma)*, *Ain (Terminalia tomentosa)*, *Pakar (Ficus infectoria)*, *Pangara (Erythrina suberosa)*, *Lokhandi (Ixora pariviflora)* and *Sitaphal (Anona squamosa)* are rarely noticed.

Babul and the other species with it are found in different soils. As per the observations on the field, followings species are recommended for raising in areas with different types of soils;

- (i) In deep black cotton soil – Babul (*Acacia arabica*) will be the main species to be sown.
- (ii) In light black soil - Babul (*Acacia arabica*), *Prosopis juliflora*, *Eucalyptus hybrid* and *Neem (Azadirachta indica)* will be tried.
- (iii) On Chunkhadi (Calcereous loamly) soil - *Prosopis juliflora*, *Khair (Acacia catechu)*, *Bhosa (Bauhinia racemosa)*, *Sisoo (Dalbergia sissoo)* *Karanj (Pongamia glabra)* and *Neem (Azadirachta indica)* will be raised.
- (iv) In Bharak (poor sandy loam) or inferior soils – Babul (*Acacia arabica*), *Khair (Acacia catechu)*, *Rohan (Soymida febrifuga)* *Eucalyptus hybrid* and *Anjan (Hardwickia binnata)* will be sown on the ridges formed after ploughing, in lines 18 feet apart. Such species will be sown in a separate line.
- (v) In certain areas, Teak has come up well; it may be tried in suitable areas. This will provide some small timber to meet the local demand and also will increase the value of the forests.
- (vi) To prevent erosion, Bamboos, Chandan and Siris (*Albizzia lebbeck*) will be planted departmentally along banks of nalas.

#### SECTION: 5.8. ROTATION

In Upadhayay's plan the rotation period for Babul was fixed for 30 years. The rotation was fixed on the criteria related to agri-silvi practice in vogue at that point of time. The important constrictions were (1) Productive capacity of soil to be maintain if possible improve (2) growing stock must be felled and area to be replanted as soon as it is capable of yielding maximum return. The Babul mostly used as fire wood. A very low proportion of it is used as timber for agricultural implements. Now a day variety of uses such as planks of centring, packing boxes for oranges, furniture etc. There is no reliable complete data collected during the preparation of this working plan so as to the year in which the main annual increment of Babul crop culminate. However as per the data available in Upadhayay's plan rotation is fixed at 30 years then the tree attains 30" girth at the age (i.e. 75 cms.) whereas last working plan of Vinod Kumar, Ramjising Yadav and G.P.Garad. CAI/MAI curves intersect at 33 years of age and corresponding girth is 108 cms. Therefore 105 cms. is the harvestable girth prescribed. Considering no reliable data regarding the growth of Babul trees available and as such no work is carried out in this working circle during last two plan period, considering it as slow growing species and its utility for soil and moisture conservation no felling of babul trees is prescribed.

Accordingly Babul ban will have only one working series which is further divided into 10 annual coupes, the details are given in Appendix No. XL.

#### SECTION: 5.9. REGULATION OF YIELD

**No yield. No regulation.**

SECTION:5.10: DEMARCATION OF COUPES, PREPARATION OF TREATMENT MAP,  
TREATMENT PROPOSED AND MARKING RULES

5.10.1. Demarcation of Coupes: **The main coupe shall be demarcated in the year of working.**

5.10.2. Preparation of Treatment Map: **It will be prepared by RFO and verified by ACF. Treatment map will be prepared on graph paper in 1:5000 scale for plantation to be taken up. ACF has to certify the suitability of the site with respect to plantation to be carried out as elaborated in para Choice of Species. The trace of the coupe map will show the contours along with important features like *nala*, streams, old plantation, etc.**

5.10.3. Treatments Proposed: **The various treatments proposed are as under:**

(i) **The soil and moisture conservation treatment shall be carried out as given in Miscellaneous Regulations.**

(ii) **The plantation of Babul by ploughing and seed sowing will be carried out where as other species as mentioned in the choice of species will be planted as per the requirement of the site and the plantation model suggested as per site requirement. Approximately area of 10 ha. will be the plantation target per working series per year. It may increase if more area is available.**

(iii) **The established multiple coppice shoots will be reduced to one per stool retaining the vigorous one, which is closer to the ground.**

(iv) **The undesirable under growth, which is preventing growth of natural regeneration of desired species, will be removed. All trees which are marked for felling, in remarks column of marking register, reasons for marking such as mature, dead, malformed, live high stump, singling of coppice shoot etc. will be recorded.**

5.10.3. Marking Technique and Marking Rules:

**No marking. No rules.**

SECTION: 5.11. AGENCY OF WORKING

**All operations in Babul Ban Working Circle will be carried out through JFMCs. In absence of JFMC work will be carried out departmentally.**

SECTION: 5.12. SOIL MOISTURE CONSERVATION WORKS.

**Soil and moisture conservation works will be taken over the entire working circle area as given in Miscellaneous Regulations.**

5.12.1. Artificial Regeneration – **The areas of Babul Ban are deficient of Natural Regeneration and these areas will be regenerated through seed sowing of Babul and will be planted through other suitable species as per the site requirement. Planting will be taken in the next year of main working. Seeds collected from known sources be utilized for regeneration.**

5.12.2. Weedings – **Repeated weedings will be done along with causality replacement as in the case of regular plantation. The congested rows will be thinned out earlier and the Babul plants spaced approximately to their own heights. Three weedings in 1<sup>st</sup> year, Two in 2<sup>nd</sup> year and One in 3<sup>rd</sup> year will be carried out.**

SECTION: 5.13. SUBSIDIARY SILVICULTURAL OPERATIONS

Thinning – **Thinning will be carried out departmentally in the 6<sup>th</sup>, 11<sup>th</sup> and 21<sup>st</sup> year of plantation. Babul trees will be spaced approximately to their own height. For other species Schedule given in plantation scheme be followed.**

SECTION: 5.14. OTHER REGULATIONS

5.14.1. 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 plantation.**

5.14.2. Fire Protection – **The coupes will be rigidly protected from fire for the period of 5 years as per the procedure given in Miscellaneous Regulations.**

SECTION: 5.15. INVOLVEMENT OF VILLAGE COMMUNITIES

**These Babul Bans are situated in scattered patches in the midst of agricultural fields or adjoining villages. Due to their locational disadvantage, these forests are subjected to illicit felling, grazing, encroachments and other biotic pressures. To regenerate and restock these areas active involvement and cooperation of local people in protection management and development of Babul Bans is necessary. The JFMCs be involved in protection, conservation and management of Babul bans.**



CHAPTER-VI

WORKING PLAN FOR THE KURAN WORKING CIRCLE

SECTION: 6.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

6.1.1.1. **This Working Circle includes the entire areas of Kuran Working Circle of previous Vinod Kumar, Ramjisingh Yadav, and G.P.Garad's Working Plan, which includes 52 Ramnas. Total area allotted to this working circle is 7220.659 ha. The whole area is incapable of growing good tree growth.**

Table 6.1  
Total Area of Kuran Working Circle

Range	RF 'A' Class		RF 'C' Class		RF 'C' Class Grass Ramna		Total Comptt Nos.	Total Area
	Comptt Nos.	Area	Comptt Nos.	Area	Comptt Nos.	Area		
Amravati	15	1978.83	08	650.775	04	580.862	27	3210.467
Chandur Rly	02	239.888	02	226.543	06	713.594	10	1180.025
Paratwada	5	302.533	05	405.702	00	00	10	708.235
Morshi	14	853.474	23	624.307	09	480.904	46	1958.685
Warud	00	00	00	00	03	163.247	03	163.247
Total	36	3374.725	38	1907.327	22	1938.607	96	7220.659

SECTION: 6.2: GENERAL CHARACTER OF THE VEGETATION:

6.2.1.1. **Area allotted to this working circle is miscellaneous and scrub forest of under stocked nature and most of the areas are devoid of tree growth. The area is scattered and stunted growths of shoots like Salai, Anjan, Moin, Khair, Bor, Hiwar, Palas, Bhosa, Teak and tall grasses are present. The grasses found are Kusali (*Andropogon contortus*), Paonia (*Sehima sulcatum*), Sheda (*Sehima nervosum*), Bhurbhusi (*Eragrostis tennela*), Gondal, Pochati (*Apluda mutica*) etc.**

SECTION: 6.3: SPECIAL OBJECTS OF MANAGEMENT:

- i) **To improve the quality and quantity of fodder in the forest by introducing the local varieties of fodder grasses and fodder tree species.**
- ii) **To involve JFMC committees in the management of Kurans.**

SECTION: 6.4: COMPARTMENT AND WORKING SERIES:

6.4.1.1. **The details of the compartments allotted to this working circle along with the working series formed have been given in Appendix No.XL of this plan. The entire area has been divided into five working series as given below:**

Table 6.2.

Sr.No	Range	Working Series	Type of Forest
1	Amravati	Wadali	"A" Class
2	Chandur Rly.	Mardi	"A" Class + "C" Class
3	Amravati	Pohara	"C" Class
4	Morshi	Kekatur	"A" Class + "C" Class
5	Paratwada	Borgaon Dori	"A" Class + "C" Class
6	Amravati+ Chandur Rly	Indla Grass ramna	"C" Class
7	Morshi + Warud	Bhalapur Grass ramna	"C" Class

SECTION: 6.5: ANALYSIS AND VALUATION OF THE CROP:

6.5.1.1. Stock-mapping - **Not needed.**

6.5.1.2. Age and density - **The area is sparsely wooded. The trees wherever present are young to middle aged.**

6.5.1.3. Enumeration – **Enumeration is carried out during 2010-11. Total 200 sample plots of 0.36 ha. each was laid. Sampling intensity is 1%. The results of enumeration shows that 124 plants per ha are available which indicates that area is sparsely wooded. The details are shown in para 6.2.1.7.**

SECTION: 6.6: METHOD OF TREATMENT:

6.6.1.1. **Every year 1/5<sup>th</sup> of the each ramana has been proposed to be taken for treatment. Thus in the entire plan period each ramana will be treated twice.**

6.6.1.2. **In the 1<sup>st</sup> year of operation treatment map will be prepared for each coupe to be treated and following works are proposed to be taken:**

- i) **All obnoxious weeds and thorny shrubs and bushes will be up rooted, out of the closed area about 50 ha. per working series annually fit for ploughing and sowing of seeds will be selected for fodder development.**
- ii) **Area selected for fodder development will be protected by digging TCM with JCB machine. This is to be treated as mandatory requirement for raising of fodder grasses.**
- iii) **The seeds of superior fodder grasses like Sheda, Paonia and Marvel etc. will be sown after vertical and horizontal ploughing in plain area and along the contour in sloppy area. Seed sowing or preferably tussock-planting of grasses like Marvel, Sheda, and Paonia etc. will be carried out on the freshly excavated and heaped soil bund. Grass seed sowing shall be carried out before rains. Weeding will be carried out if necessary in favour of fodder grasses raised.**
- iv) **The fodder grasses raised will not be permitted to be cut during the first two years of their introduction so as to allow them to seed and multiply.**
- v) **The area will be effectively fire-traced every year. It will be closed to grazing. Cutting of grasses will only be allowed after October 31<sup>st</sup> from 3<sup>rd</sup> year onwards.**
- vi) **Soil and moisture conservation works such as nala bands, van talao, earthen dam, gully plugging etc. may be carried out as per requirement of site.**
- vii) **Grass/Fodder may be sold/utilized by JFMCs as per prevalent Govt. directions.**

SECTION: 6.7: CHOICE OF SPECIES:

6.7.1.1. **Seed broadcasting and tussock planting of superior fodder grasses like Paonia (*Ischoemum sulcatum*), Marvel (*Dicanthium annulatus*), Sheda (*Ischoemum laxum*) or any other indigenous species as suggested by local experts from Agriculture dept. may be taken up.**

SECTION: 6.8: FORMATION OF COUPES:

6.8.1.1. **The details of the coupes formed have been given in the App.No XL of this plan.**

SECTION: 6.9: IMPLEMENTING AGENCY:

6.9.1.1. **All the prescriptions will be carried out preferably by JFMCs / Departmentally. JFMCs will have total stake on fodder/grass of Kuran working circle as per Govt. directions.**



CHAPTER – VI A

WORKING PLAN FOR URBAN FOREST MANAGEMENT WORKING CIRCLE

SECTION:1: GENERAL CONSTITUTION:

6A.1.1. Urban forestry is a specialized branch of forestry that has in its objective the cultivation and management of trees which in turn will be doing potential contribution on the physiological, sociological, environmental and economic well being of urban society. In urban forestry emphasis is given on multi-managerial ecosystem that includes the area which comes under municipal administration or nearby or adjoining to this area, with the scope of water shed development, wildlife habitat development, recreation opportunities, land scape designing, tree care and allied activities which connects human being to nature as Nature trails, Biodiversity parks, Children parks, Eco-friendly parks, Forest Parks etc. Urban forests provide many environment and social services that contribute to the better quality of life in cities. This is land of greenery and serenity which is surrounded by cement concrete jungle from all around act as green lungs for the city or town nearby. Apart from their aesthetic appeal these forest patches have a great multiple use value for the city dwellers, planners and civic authorities. People use these forest areas for morning and evening walk , bird watching , outing,picnics and as resting places.

This working circle includes the forest area falling within the limits/nearby of Amravati, Morshi and Dhamangaon (Rly.) cities. These forest areas are of varying shapes and sizes and scattered at places within the municipal limits and adjoining areas. Some important forest areas are located at Wadali and Morshi. The area details are as follows:-

Table 6.1  
Total Area of Urban Forestry Working Circle

Range	RF 'A' Class		RF "C" Class		Total Comptt Nos.	Total Area
	Comptt Nos.	Area	Comptt Nos.	Area		
Amravati	09	1216.366	07	849.161	16	2065.527
Chandur Rly	24	75.892	00	00	24	75.892
Paratwada	00	00	00	00	00	00
Morshi	01	11.766	01	13.516	02	25.282
Warud	00	00	00	00	00	00
Total	34	1304.024	08	862.677	42	2166.701

SECTION : 2 : GENERAL CHARACTER OF THE VEGETATION :

6A.2.1. A few patches within the municipal limits bear good vegetation. Part of Amravati and adjoining areas were afforested under "Green Amravati" scheme implemented by the Forest, Social Forestry department in the early nineties. Areas were fenced for effective protection against biotic interference. Irrigated plantations were undertaken within the fenced areas for early establishment of seedlings and their faster growth. Many of such urban areas are now covered with successful plantations.

These forest patches are not well demarcated in the field and therefore are highly susceptible to encroachment and unauthorized usage from the surrounding populations. It has been observed in the past that the barbed wire or chain link fencing could not prove to be effective for demarcation purpose, since miscreants could easily cut and sell it in market. On the other hand forest areas which have been fenced with R.C.C. walls provide very effective for protection against encroachment, illicit felling, illegal grazing and fires from adjoining areas.

**SECTION : 3 : SPECIAL OBJECTS OF MANAGEMENT:**

**6A.3.1. The special objects of management of the forests are:**

- (i) To mitigate the air pollution generated in the city by absorbing gaseous compounds and intercepting air born particulate matter and also to mitigate noise pollution
- (ii) To have dampening effect on city temperature due to both shading and evapo-transpiration. To ameliorate climate through shading, which reduces the amount of radiant energy absorbed, stored and radiated by built surfaces.
- (iii) To facilitate the soil water infiltration and lower surface run off and act as an important mediator in urban hydrological cycle.
- (iv) To raise awareness through various activities like, Bio-diversity park, Forest park with eco-friendly toys, Nature trails, Canopy trails for trekker and nature lover, Bird nesting, Butterfly park and Arboretum.

**SECTION : 4 : ANALYSIS AND VALUATION OF THE CROP.**

The urban forestry working circle is formed first time. The compartments included in this working circle were previously included in the Afforestation, Babulban, Kuran working circle. The enumeration was carried out by FRSS during 2010-11 for all working circles. There is no specific enumeration activity carried out in favour of Urban Forestry Working circle. Since there is no felling only planting and eco-tourism and awareness activities are to be carried out, therefore at present there is no urgent need of analysis and valuation of crop separately as the data of enumeration is available.

**SECTION : 5 : WORKING CYCLE :**

No working cycle can be fixed as the site specific works will be taken as per time schedule given in project report of eco development activities to be carried out in the division.

**SECTION 6: TREATMENT:**

At present Wadali and Lontek in Amravati range, Malkhed in Chandur Railway, Durgwadi in Morshi and Dhanodi in Warud range are being developed as eco-tourism spots. There are other potential spots such as Bairam in Paratwada, Indla and Bhankhed in Amravati and Salburdi forest area (Temple is located in MP) in Morshi Range which can be developed as eco-tourism spots.

Natural water sources and water bodies need development by carrying out soil and water conservation works such as gully plugging, nala bunds, check dams, CCT/DCT. Vantale can be taken up at suitable sites. Water storage tanks can also be built up at suitable places.

Nature Interpretation Centres be developed at eco-tourism spots so as to raise awareness among students and visitors. Centres be provided with trophies, models, gadgets, Information boards, nature quiz, dos and don'ts .

Biodiversity Parks, Arboretum, Bamboo cetum, Butterfly park, Nakshatrvan, Smritivan, Medicinal Plant Garden, Forest Park may be developed at appropriate places.

Nature trails/Nisrag Paulwat may be developed for walk in nature. Trees along the trails be labeled. Signages/information boards shall be put up to disseminate information of local flora and fauna. Binoculars and Bicycles may be provided.

Bird nests and birdbaths shall be placed at strategic locations for attracting birds for foraging and nesting purposes.

**Joint Forest Management Committee may be involved for management of eco-tourism facilities. Nurseries can be developed. Sale counters for seedlings, minor forest produce, value added products can be opened**

**Any developmental non-forestry works will be carried out only after taking sanction under Forest Conservation Act 1980.**

**Deputy Conservator of Forests Amravati to prepare eco-tourism plan and implement it considering the treatment suggested and may add other suitable activities to be carried out.**

**Compartments/ Survey numbers allotted to this working circle are important valuable lands. Therefore it is strongly felt that these areas need to be protected against encroachments. Therefore it is suggested that boundary demarcation works are to be given priority and be carried out immediately.**

**Deputy Conservator of Forests Amravati shall prepare a five year plan for boundary demarcation and fencing works. Area may be demarcated and protected either by barbed wire fencing or chain link fencing or by compound wall or TCM with the help of JCB depending on the vicinity of the area to the habitation, biotic pressure and any other important site specific factor. This plan may be implemented within first five years i.e. during 2015-16 to 2019-20.**

**Deputy Conservator of Forests Amravati shall prepare a scheme of afforestation of under stocked area with planting of native and indigenous tree species according to suitability of site.**

#### **SECTION 7: OTHER REGULATIONS:**

**1) Fire Protection:- These forests shall be fire protected strictly. For this fire protection plan be prepared annually. Works of fire protection such as fire line cutting and burning, fire tracing, patrolling, observation through watchtowers, fire watchers may be carried out scrupulously. JFM committees may be involved in these works.**

**2) Grazing:- Grazing is prohibited in these forests. Where ever fodder grasses are available it may be allowed to cut and recover necessary fees through JFMCs.**



## CHAPTER – VII

### WORKING PLAN FOR MISCELLANEOUS WORKING CIRCLE

**This working circle includes all the area which has been handed over to various developmental agencies that has been diverted for non-forestry use. The total area of this working circle is 1622.346 ha. The details are given in the Appendix No. LXV of this plan.**

Table 7.1

Range	Area allotted to miscellaneous working circle (ha.)
<b>Amravati</b>	<b>60.205</b>
<b>Chandur Railway</b>	<b>80.775</b>
<b>Morshi</b>	<b>1046.753</b>
<b>Paratwada</b>	<b>288.032</b>
<b>Warud</b>	<b>146.581</b>
Total -	1622.346



## CHAPTER – VIII

### WORKING PLAN FOR BAMBOO (OVERLAPPING) WORKING CIRCLE

#### SECTION: 8.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

**8.1.1.1. This working circle includes all areas where bamboo is present in workable quantity either in plantation or in natural forests in the division. Workable means that there are sufficient bamboo clumps, which require independent working and it is practicable to do so. Areas with scattered bamboo have been included in this working circle. The area of the working circle includes those areas where bamboo has been successfully introduced and bamboo clumps are now in a position to be worked for removal of matured culms. In general, in this division bamboo is not found naturally on large scale in the areas to be harvested. Even then this working circle has been carved out to work the areas which are found suitable for working of Bamboos. It is hereby left on the discretion of Deputy Conservator of Forests in charge of division to decide the area and its extent to have bamboo felling in consultation with the controlling authority.**

#### SECTION 8. 2: GENERAL CHARACTER OF THE VEGETATION:

**8.2.1.1. The general character of the vegetation in the area included in this working circle has been described in the respective working circles. Only the condition of bamboo in this tract has been described here. Species of bamboo commonly found is Dendrocalamus strictus. Earlier it was found in most of the areas. But as discussed in past management it was wiped out from the area due to reckless and illicit removal, frequent fires and grazing. Now, this is found where it has been introduced by means of artificial plantation. Where ever clump formation has been completed, exploitation of bamboo will be carried out for sustenance of produce. The extent of area is not given due to reason as cited above.**

#### SECTION: 8.3: LOCAL AND COMMERCIAL DEMAND:

**8.3.1.1. Bamboo is used in a variety of ways by the local tribals and people. Tribals make tattas, baskets and so many other articles of bamboo. Local people use bamboo in orange orchards as stakes use to support for fruit laden orange trees, hut construction, temporary walls of hut, compound fencing, cattle shed etc. Local demand for bamboo is high, considering the population and variety of its uses. There is a vast gap between demand and supply of bamboo in this tract. Presently, village communities meet their demand of bamboos by purchasing from private vendors who purchase it from wholesale dealers who in turn purchase it in the auctions held by department in Maharashtra and Madhya Pradesh.**

**8.3.1.2. To meet the growing demand of bamboo it is proposed that bamboo should be resorted as main species of plantation where area is fit and will be carried out through JFMCs only. The division should do exhaustive exercise to assess the village wise, family wise bonafide requirements of bamboo to the local people and the period during which it is required.**

#### SECTION .8.4: BLOCKS AND COMPARTMENTS:

**8.4.1.1. No blocks have been formed. Areas included in this working circle are exclusively bamboo plantation areas spread over the division. The allotments of compartments to this working circle have not been given. In recent bamboo plantations the bamboo clump formation is yet to be complete and it is in the process of formation.**

SECTION.8.5: SPECIAL OBJECTS OF MANAGEMENT:

8.5.1.1. **The special objects of management of this working circle are as follows:**

- (i) **To meet demand of the local population.**
- (ii) **To introduce the scientific exploitation of Bamboo so as to get maximum sustained yield.**

SECTION: 8.6: METHODS OF TREATMENT:

8.6.1.1. **In general crop is mostly young and clumps are formed or in process of forming, in general. Therefore, in the first phase efforts will be made to boost up clump formation. In case of established clumps harvesting will be done as per the standard method. The crop will be treated on clump basis i.e. each clump will be treated independently as per the requirement.**

SECTION: 8.7: CUTTING CYCLE:

8.7.1.1. **The harvesting of bamboo will be done on a cutting cycle of 4 years. Entire area of established bamboo has to be constituted into one working series. This working series has to be divided into 4 coupes, viz. A, B,C and D and one of the coupes will be worked annually. Allotment of compartments to the different coupes and sequence of felling have been left for DCF in charge of the division after finalizing the area to be worked in each range. Schedule prescribed in the plantation scheme be strictly adhered to.**

SECTION.8.8: ANALYSIS AND VALUATION OF THE CROP:

8.8.1.1. **STOCK MAPPING: Natural areas are rare and the bamboo areas are mainly plantation areas, there is no need to have separate stock mapping of these areas**

8.8.1.2. **ENUMERATION: No enumeration was carried out separately for bamboo. It is the part of enumeration inventory buildup.**

SECTION.8.9: IDENTIFICATION OF AGE OF BAMBOO:

8.9.1.1. **Since the marking of bamboo is highly selective, it is necessary to distinguish current year, previous year and mature culms from one another.**

8.9.1.2. **CURRENT YEAR: Culm sheath is present on lower half of the culm, branches are present throughout the length of the culm and bloom (white powdery dust) is present abundantly and comes off easily when touched.**

8.9.1.3. **SECOND YEAR: Culm sheath absent, branches are present practically at all nodes. Bloom is patchy and does not come off easily.**

8.9.1.4. **THIRD YEAR: Culm sheath absent, branches are present practically at all nodes, white bloom is absent and it becomes blackish Grey.**

SECTION: 8.10: AGENCY FOR HARVESTING:

8.10.1.1. **Since there is heavy local demand of bamboo, therefore, all coupes shall be worked by any JFMCs and where it is not possible to do so it shall be done departmentally.**

SECTION: 8.11: METHODS OF EXECUTING THE TREATMENT

8.11.1.1. **The coupes due for working will be demarcated in April/May (before the onset of monsoon) in the year in which they become due for harvesting by erecting poles at suitable intervals. On the poles, compartment number, coupe number and name of cutting series will be written.**

8.11.1.2. Soon after the rains, the entire coupe due for working will be thoroughly inspected by the R.F.O and 10% checking will be done by an A.C.F. The inspection will be carried out compartment wise and the area containing bamboo will be shown on the map. In this area sample enumeration of bamboo will be done and on its basis estimate of exploitation of bamboo clumps will be prepared. As per the enumeration data and estimate of various works, bamboo will be exploited from the coupe area.

SECTION: 8.12: METHODS OF WORKING:

8.12.1.1. The methods of working will be different for both regeneration and established clumps as given below:

8.12.1.2. FOR REGNERATION: No harvesting will be carried out until clumps are established. For establishment of clumps circular trench may be dug up around the clump before rainy season.

8.12.1.3. FOR ESTABLISHED CLUMPS:

- (i) No harvesting works should be permitted from 15<sup>th</sup> June to 30<sup>th</sup> Sept.
- (ii) No clump should be considered fit for harvesting unless it contains more than 8 mature culms (More than one year old)
- (iii) In a mature clump following types of culms will be retained
  - A) All current year i.e. less than one year old culms.
  - B) For the rest of culms equal in number to the current year culms or eight whichever is more.
- (iv) Following culms shall be removed from all clumps;
  - (a) All dead, decayed and dry bamboos.
  - (b) Culms whose half or more top part is broken or damaged.
  - (c) Twisted or malformed culms.
- (v) In a mature clump if mature culms are available for retention as per rule (iii) (B) the following types of culms will be removed,
  - (a) Culms where the growing shoots have been cut to a length of more than one third of normal length or the culms which are badly damaged.
  - (b) Twisted, bend or otherwise malformed culms
- (vi) Culms to the extent available for exploitation as per rule (iii) above should be exploited in such a manner that the clump is evenly worked throughout and that the bamboos to be retained are evenly spaced out in the clump.
- (vii) The culms on the periphery of the clump will not be removed except where absolutely necessary to facilitate working in the interior portion of the clump.
- (viii) The height at which the culms shall be cut must not be lower than 15 cm. and more than 45 cm. from the ground level but in any case, not higher than the second internode and lower than first internode.
- (ix) In case of flowering clumps exploitation should be deferred till the seeding is completed.
- (x) Following acts will be strictly prohibited:
  - (a) Digging of rhizomes.
  - (b) Lopping of bamboo culms for fodder.
  - (c) Use of tender bamboo culms for bundling.
- (xi) Use of sharp instruments is insisted upon during extraction.
- (xii) All climbers infesting the bamboo clumps will be removed.

Cutting should be preceded by on field training to the staff and labourers. The work shall be supervised by RFO and ACF to verify that the above prescriptions are followed scrupulously. A sample check of above work will be carried by DCF in each coupe.

SECTION: 8.13: BAMBOO FLOWERING AND TREATMENT TO GREGARIOUS FLOWERING AREA:

8.13.1 SCOPE AND JUSTIFICATION :

8.13.1.1. Since the bamboo crop dealt with is of mainly plantations of 1<sup>st</sup> year to 15<sup>th</sup> years during this plan there is little chance of gregarious flowering. But operations necessary to be followed after flowering are required to be known to field staffs and authority. Therefore, operations to be followed sequentially are as follows:

8.13.1.2. Since in gregarious flowering all bamboos dry simultaneously and as dry bamboo is vulnerable to fire hazard, its quick removal is essential. But the volume of work is so much that to carry out this operation advance planning and preparation is essential. As soon as the gregarious flowering occurs in any locality its extent should be found out and recorded in the compartment histories and also in the "Divisional Note Book". The same will immediately be reported to the Conservator of Forests, Silviculturist and Conservator of Forests, Working Plan. As soon as bamboo starts flowering gregariously, the entire area will be effectively closed to grazing and strictly fire protected for a period of 10 years from the year following the year of flowering, so that the seeds falling on ground could germinate, germinated seedlings could establish and clump formation could start. The dry culms after seeding should be cut and disposed of as soon as possible.

8.13.1.3. After seeding profuse regeneration of bamboo comes up in the following monsoon. It takes nearly 8 years for new regeneration to reach the harvestable size, but often it takes considerably more time if proper tending operations are not carried from time to time.

8.13.2 COLLECTION OF SEEDS AND IT'S DISPOSAL:

8.13.2.1. The fresh seed of bamboo will be collected from clumps. The seed so collected will either be sent to the Silviculturist for storage and further distribution among various divisions or be used locally as per the requirement.

8.13.3 TENDING OPERATIONS:

8.13.3.1. After completion of seeding it is essential to properly look after the young regenerated crop till the start of clump formation. The following operations will be carried out in the natural regeneration of bamboo.

(A) CROP OF AGE BETWEEN 1 AND 3 YEARS :

8.13.3.2. During this period the area will normally contain thick seedlings crop and the clump formations does not start. For timely formation of clumps the following tending operations will be carried out.

- (i) The area will be thoroughly worked over and 0.8 m diameter foci, at the rate of 300 to 400 clums per ha distributed evenly over the whole area will be formed.
- (ii) All growth of grasses, weeds and even Bamboo seedlings upto a distance of 1.5 meter all around the foci formed as above, will be cleared so that the growth of the bamboo seedlings in the selected foci is not hampered.
- (iii) All climbers within and around the foci upto 1.5 meter distance will completely be removed.
- (iv) The whole area will be strictly protected from fire and grazing.

(B) CROP OF AGE BETWEEN 3 AND 8 YEARS :

8.13.3.3. During this period clump formations starts but the crop is yet immature for harvesting. During this period following operations will be carried out.

- (i) All badly grown, twisted and damaged culms from the selected foci will be removed.
- (ii) All weeds, grasses and climbers, within and around the foci upto a distance of 1.5 meter will be completely removed.
- (iii) Tree growth of species, other than Teak, Ain, Shisham, Bija, Tinsa, Tiwas, Dhaora, Haldu, Karam, Semal, Mowai and Bhirra over topping the clumps will be removed.
- (iv) The whole areas will be strictly protected from fire and grazing.

(C) CROP OF AGE ABOVE 8 YEARS :

8.13.3.4. When the crop age is 8 years, the clump formation is normally completed and clumps are mature enough for harvesting. The treatment during this period will be of the nature of harvesting-cum-tending. The felling rules, already described in the earlier paragraphs, will be applied.

SECTION 8.14: CYCLE OF TENDING OPERATIONS:

8.14.1.1. The operations, as prescribed under (A) or (B) above, will be carried out annually. When it is not possible due to administrative reasons, these operations, except fire protection, will be carried out alternate years or at the most in a cycle of 3 years. This will be decided by the Chief Conservator of Forests. The fire protection will be carried out every year and the grazing will remain closed till completion of clump formation.

SECTION: 8.15: INJURIES DUE TO INSECTS AND THEIR CONTROL:

8.15.1.1. The insects known to attack the bamboo culms are *Estigma Chinensis* (*Chrysomelidae colioptera*) which attacks new culm and make galleries inside the inter nodes. *Cryptotrachelus longipes*, which is responsible for destroying the growing terminal bud causing branchy growth. The damage caused by insects is not reported so far in this tract.

8.15.1.2. The attack of these insects can be controlled by taking up the following measures:

- (i) All the infected culms will be cut and burnt during winter when the insects hibernate.
- (ii) To cause light ground fire run through the infected areas in winter as the insects hide under the debris and
- (iii) Biological control through insectivorous birds.

SECTION: 8.16: OTHER REGULATIONS:

8.16.1.1. FIRE PROTECTION: The new shoots of Bamboo are badly affected by fire and therefore, Bamboo area will be protected completely from fire.

8.16.1.2. GRAZING: In flowering areas grazing is strictly prohibited and the area will be closed for grazing.



## CHAPTER - IX

### WORKING PLAN FOR OLD PLANTATION (OVER LAPPING) WORKING CIRCLE

#### SECTION: 9.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

9.1.1.1. **This working circle comprises of old plantations taken in past and scattered in all five ranges. Teak plantations were taken in coppice with reserve working circle, improvement working circle, selection cum improvement working circle and afforestation working circle in previous plans. Besides, some plantations both of teak and miscellaneous species were also taken under different schemes in the past. Therefore, areas included in this working circle are not in a consolidated block rather in scattered patches, spread over in all five ranges. These are also included for that purpose.**

#### SECTION: 9.2: GENERAL CHARACTER OF THE VEGETATION:

9.2.1.1. **Most of the plantations taken earlier in small patches are successful. Site quality varies from IV to III. The area is fully stocked. Crop is uniform. In Teak plantations, the subsequent silvicultural operations have been carried out to some extent but no such operations have been observed in plantations of miscellaneous species.**

#### SECTION: 9.3: BLOCKS AND COMPARTMENTS:

9.3.1.1. **The range wise details of compartments and their areas allotted to this working circle have been given in Appendix No. LXV of this plan**

Table.9.1

Sr. No.	Name of Range	Range Area	Area In WC
1	Amravati	10139.947	219.14
2	Chandur Rly.	11345.739	
3	Paratwada	8145.115	58.91
4	Morshi	12201.235	87.51
5	Warud	10199.845	225.15
Total		52031.881	590.71

#### SECTION: 9.4: SPECIAL OBJECTS OF MANAGEMENT:

9.4.1.1. **The main objective of teak plantation in different working circle was to have the teak crop with growth parameters comparable to those in the yield table. For this, it was essential to follow all silvicultural operations, prescribed in the scheme, after doing plantation, which in fact could not be observed meticulously.**

9.4.1.2. **Plantations of Miscellaneous species are in good proportion. The main objective of it was to have mixed forest as generally observed in deciduous forests. Therefore, to achieve the goal of the plantation to the greatest extent, the objectives of management are as follows...**

- (1) **To update the data of plantations carried out in the past to distinguish between successful and failure plantations.**
- (2) **Successful plantations to be worked as per the scheme of plantation or otherwise cleaning, thinning and other silviculture operation are to be carried out as per site requirement.**
- (3) **To carry out thinning as per the yield table on the basis of age and site quality.**
- (4) **To improve the crop by doing required silvicultural operations so as to achieve growth parameters comparable to those in the yield table.**
- (5) **To cover thinning in all overdue plantations in the shortest possible time and to ensure thinning and other silvicultural operations in other plantations when they are due.**

SECTION: 9.5: ANALYSIS AND VALUATION OF THE CROP:

9.5.1.1. Stock maps: **All plantations have been shown on stock map on 1:50000 scale.**

9.5.1.2. Density: **Generally density is above 0.4 for successful plantation and below 0.4 for failure plantations.**

9.5.1.3. Enumeration: **1% stratified random sampling enumeration has been carried out. Enumeration has been done by existing staffs of SOFR unit of Amravati.**

9.5.1.4. Age and Site Quality: **Plantations taken right from agrisilviculture plantation after clear felling and planting during 1902-03 to 1926-27 to recent plantations taken under various schemes. But the data for old plantations are not available. Recorded data of plantations raised after 1960 onwards are available and on that basis this working circle has been carved out to give adequate attention to it. Site quality is generally found to be IV and sometimes that of III is found intermixed with it.**

SECTION: 9.6: TREATMENT MAP:

9.6.1.1. **Treatment map, classifying total area in following three types, will be prepared by the R.F.O. and checked by an A.C.F.**

9.6.1.2. TYPE-I: **This will include fully stocked areas i.e. the portion of plantation, which is successful.**

9.6.1.3. TYPE-II: **This will include the patches where plantation is failure.**

9.6.1.4. TYPE-III: **This will include the portion of plantation, which is not completely failure, rather stem/ha is less than the required.**

SECTION: 9.7: SILVICULTURAL OPERATIONS:

9.7.1.1. **Silvicultural operations will be taken as per types shown on treatment map. Silvicultural operations to be taken are as follows:**

9.7.1.2. THINNING: **Thinning will be carried out in Type-I and Type-III areas. The thinning schedule for all plantations has been given in Appendix No.LXIV in volume II.**

9.7.1.3. **The distribution of stems in different girth classes for a given site quality and age at an interval of five years have been given as per the Yield Table for teak plantation prepared by Forest Development Corporation of Maharashtra Limited. This will provide reference for thinning marking. If the difference in number of stems/ha between the actual and those as per yield table is large, the decision for retaining the number of stems per hectare should be taken judiciously. In this case if thinning is done as per yield table, large opening may be created. Teak, being shallow rooted, is susceptible to uprooting by strong winds and therefore, the actual number of stems/ha required will be achieved gradually. To carry out thinning in such plantations weighted average of diameter/girth can be used. To break the mono-culture some valuable miscellaneous species, such as Shisham, Bija, Shivan, Ain and fruit trees will also be retained. But the distribution of stems in different girth classes will be maintained as per yield table. In older plantations, the populations will be reduced to the desired number as per the yield table. The deficiency in any girth class should be adjusted from the nearest girth class on the basis of basal area/volume. Basal area may be measured with the help of Wedge Prism of suitable BAF (Basal Area Factor) or by computing the basal area of individual trees and summing them to get the basal area. Thus arrived crop girth is compared with the crop girth for the plantation teak of that age with the help of yield table. After marking of the trees for felling the basal area of the remaining crop will be computed by excluding the trees marked for felling as they would have been removed. If the basal area is found approximately near to that what we required then the marking is fit for felling for thinning otherwise the marking would be adjusted to achieve the desired result.**

9.7.1.4. **First thinning will be done in 10<sup>th</sup> year and second thinning in 15<sup>th</sup> year and subsequent thinning will be at an interval of 5 years. The subsequent thinning at an interval of 5 years should be as per the yield table in case of teak. In the case of other species first thinning will be in the 10<sup>th</sup> year, 2<sup>nd</sup> thinning in 15<sup>th</sup> year and subsequent thinning at the interval of 10 years. The first two thinning should be carried out to provide space on purely silvicultural consideration. The subsequent thinning will be executed so that normalcy condition is to be achieved. The thinning schedule for teak plantation is given in Appendix No.LXIV.**

9.7.1.5. **CLEANING: Cleaning will be carried out in all types I, II and III areas. Cleaning schedule for all plantations is being given in Appendix No.LXIV. The cleaning operations will be done in next year after thinning. The following operations will be carried out.**

- (i) **Climbers will be cut all over the area.**
- (ii) **Inferior species interfering or likely to interfere with planted healthy seedlings or healthy natural growth of superior miscellaneous species will be cut.**
- (iii) **Superior miscellaneous species will be preferred to damage teak plants.**
- (iv) **Damaged seedlings will be cut.**
- (v) **Coppice growth will be removed.**

9.7.1.6. **PLANTING: In Type-II area planting with appropriate model will be taken. Planting will be taken in the next year of thinning. P.P.O. will be done during the year of thinning.**

9.7.1.7. **PRUNNING: In Type II & III areas pruning of existing sapling/poles will be carried out. This will be carried out annually with the help of Forest Beat Guard and Vanmajur in charge of the area.**

SECTION: 9.8: WORKING CIRCLE:

9.8.1.1. **Total area is to be covered under appropriate thinning during this plan period i.e. in 10 years. In recent plantations 1<sup>st</sup> and 2<sup>nd</sup> thinning will be carried out in 10<sup>th</sup> and 15<sup>th</sup> year respectively and subsequent thinning in the Teak plantations will be at an interval of each five year.**

SECTION 9.9: WORKING SERIES & COUPES:

9.9.1.1. **Total areas under this working circle will be worked under one working series. Total plantations included in this working circle will be thinned at the interval of multiple of five to have compatibility with the 5 year interval thinning regime as per yield table. The working will be as per the schedule laid down in Appendix No.LXIV in volume II of this plan.**

SECTION 9.10: METHODS OF EXECUTING THINNING:

9.10.1.1. **Before marking for thinning cleaning will be done. Thereafter, the following steps in sequence will be taken:**

- (i) **The number of stems/ha and their distribution among different girth/diameter classes will be obtained measuring all the trees in plantation in 1 ha. Grid. Result for both teak and miscellaneous species will be shown separately for each ha.**
- (ii) **With known age and top height of the site quality of the area will be assessed.**
- (iii) **Corresponding to age and site quality the number of stems/ha and their distribution among different diameter/girth classes will be obtained from the Yield table.**
- (iv) **Comparing the actual stand table with that of the yield table, the number of stems to be retained in each diameter class will be obtained.**
- (v) **The deficiency of teak stems in any girth class will be compensated with available miscellaneous species in that girth class.**

- (vi) **The deficiency in stems in any girth class remains even by compensating with miscellaneous species will be compensated with the surplus or healthy stems in nearest girth classes on the basis of basal area/volume. If stems in higher girth classes are to be compensated with stems in lower girth class then the number to be retained will be more and vice versa.**
- (vii) **Badly upset crop will be brought in normal gradually in a number of thinning and accordingly on silvicultural ground judicious thinning should be taken.**
- (viii) **In Teak Plantation Officer not below the rank of an ACF after marking and before felling basal area/ha should obtain by using suitable wedge prism excluding trees already marked for felling. The comparison of it with that of yield table value, the correctness of thinning marking will be checked. Accordingly marking for thinning will be done in whole plantation area. Again using wedge prism, the correctness of thinning marking will be checked and tested as above.**
- (ix) **The detailed enumeration and marking list will be prepared and the same will be kept in record.**
- (x) **At an interval of 5 years, the measurement of diameter and height will be recorded for growth study and yield calculations. Yield of thinning should also be recorded.**
- (xi) **Coppice shoots will be cut unless they do not create permanent gap. Climbers will be cut. Dead and badly damaged trees will be removed.**

**SECTION: 9.11: AGENCY FOR EXECUTION:**

**9.11.1.1. All the operations will be carried out as per the policy laid by the Government from time to time.**

**SECTION: 9.12: OTHER REGULATIONS:**

**9.12.1.1. FIRE PROTECTION: Plantation will be rigidly protected from fire taking all measures. JFMCs will have to be taken into confidence to ensure success in this mission. All fire protection works shall be entrusted to JFMCs.**

**9.12.1.2. GRAZING: The current coupes will remain closed to grazing for a period of five years from the year of working. The local people will be persuaded to graze their cattle in areas other than closed areas. For co-operation extended by them in protecting area from grazing, they should be allowed to cut grasses from the closed coupes free of cost. Repeated dialogue with local villagers should be continued to have better understanding with them. Besides, the suggestions and measures to control grazing, given in Miscellaneous Regulations will be followed.**

**All marking operations will be carried out departmentally, however the execution of felling may be given either to FLCS or departmentally or JFMCs.**



CHAPTER – X

NON TIMBER FOREST PRODUCE (NTFP) (OVERLAPPING)  
WORKING CIRCLE

SECTION 10.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

10.1.1. **This is an overlapping working circle covering the entire forest area of the tract dealt with. Thus the total forest area included in this working circle is 52031.881 ha.**

SECTION 10.2: NON-TIMBER FOREST PRODUCE OF THE TRACT:

10.2.1. **There are numerous Non- timber Forest Products available in this tract and are found in almost all ranges with varying extent. These natural products contribute sizeable revenue to the State exchequers as well as generate employment to local people during their lean season. These natural products play an important role in the rural economy of tribals and help maintain their health.**

10.2.2. **The important Non- Timber Forest Products, found in this tract are Moha flower and seeds, Tendu, Myrabolons, Kulu gum, Salai gum and Dhaoda gum, lac, Safed Musli, Aonla, Charoli, Hirda, Beheda,, Bel, Amba, Grass etc. The girth class wise distribution of stems per hectare is given below.**

Table No.10.1  
Table Showing Species And Girth Class Wise Distribution  
Of NTFP Trees / Ha In Amravati Forest Division

Sr. No.	Species	15/ 30	31/ 45	46/ 60	61/ 75	76/ 90	91/ 105	106/ 120	121/ 135	135/ 150	151>	Total
1	Tendu	6	1.8	0.7	0.3	0.2	0.1	0	0	0	0	9.1
2	Aal	2.2	1.9	1.2	0.5	0.4	0	0	0	0	0	6.2
3	Bel	1.5	1	0.8	0.6	0.5	0.2	0.1	0	0	0	4.8
4	Beheda	1.3	0.8	0.4	0.3	0.2	0.1	0.1	0.2	0.2	0.1	3.8
5	Hirda	1.9	1.2	0.5	0.1	0.5	0.9	0.4	0.1	0	0.1	5.7
6	Aonla	2.5	2.1	1.6	1.3	0.9	0.5	0.2	0.1	0.1	0	9.3
7	Charoli	0.8	1.2	0.8	0.9	0.8	0.7	0.4	0.1	0.1	0	5.7
8	Biba	1.3	0.7	0.7	0.6	0.5	0.3	0.3	0.1	0	0	4.4
9	Moha	0.5	0.7	0.5	0.5	0.7	0.7	0.4	0.4	1.0	0.7	6.0
10	Kulu	0.3	0	0.6	0.3	0.3	0.3	0.5	0.5	0.3	0	3.1
11	Dhaora	5	1.9	1.7	1.9	1.7	1.3	0.9	0.3	0.5	0.1	15.4
12	Salai	0.5	0.5	2	3.5	5.1	4.6	3.3	1.8	1.0	0.2	22.5
13	Khair	2.2	1.6	1.0	0.8	0.5	0.2	0.1	0	0	0	6.4
14	Kusum	1.4	0.9	0.4	0.4	0.3	0.3	0.3	0.1	0.2	0	4.4
15	Amba	4.4	3.3	1.1	1.1	0	0	0	0	1.1	1.1	12.2

SECTION 10.3. SPECIAL OBJECTS OF MANAGEMENT:

10.3.1. **As per the National Forest Policy-1988, the development of Non timber Forest Produce is one of the basic objectives for the forest management. Consistent with the above policy, the special objectives of management are as follows:**

- 1. To monitor and improve stocking of NTFP species in the forest areas.**
- 2. To enhance collection of NTFP through improved collection techniques.**
- 3. To enhance economic returns to local communities by training them in value addition techniques and marketability of various NTFPs in the Division.**

#### SECTION 10.4: OWNERSHIP AND MONOPOLY PROCUREMENT OF THE NTFP:

10.4.1 **The statutory provisions have vested ownership rights over certain listed NTFP species with the village communities in the Scheduled Areas without granting such rights over the trees and the land. Presently, this list excludes *Tendu*, *Apta* and *Bamboo*. The rules also affirm that the provisions of the working plan shall be applicable for the NTFP harvesting.**

10.4.2 **The Seventy-third Amendment of the Constitution of India has brought the NTFP under the management of the Village Panchayat. Procurement of NTFP as per Central and State Govt. directives to this effect shall be followed.**

#### SECTION 10.5. AGENCIES FOR COLLECTION:

10.5.1. **The Maharashtra Tribals' Economic Condition (Improvement) Act, 1976 empowers the State Government to enforce monopoly procurement of certain goods including the NTFP in the Tribal Sub-plan Areas. The Maharashtra Tribal Development Corporation (TDC) serves as the Chief Procurement Agent. List of items covered under the monopoly procurement vary among talukas and from year to year. This procurement provision is binding and therefore to be carried out accordingly.**

10.5.2. **In case of the remaining NTFP, the Deputy Conservator of Forests shall decide the agency for collection in accordance with the applicable rules and the policies of the department. In view of the national policy directives, local village communities should have the first charge over the NTFP collection. Therefore JFMCs are to be entrusted as the agency for collection and disposal of NTFP.**

#### SECTION 10.6. METHODS OF TREATMENT:

10.6.1. **Modifications according to legal provisions: Since legal provisions are not very explicit, it is recommended that treatments prescribed in the following paragraphs be modified according to the legal directives issued by the state government from time to time.**

10.6.2. **Fire Protection measures: Collection of NTFP is often associated with forest fire, because the villagers set fire around the NTFP-yielding trees for clearance of leaf litter and undergrowth. Fires are also caused by agents of *tendu* contractors to get better flush of *tendu* leaves. If left unattended, such fires spread into forests as forest fires. To control and prevent forest fires, following measures shall be adopted.**

- 1. The village panchayats and JFMCs shall be involved in awareness generation program to control forest fires. Villagers should be encouraged to ensure that such cleaning do not end up as forest fire.**
- 2. In case of forest fire, legal action should be taken up against the defaulters. Strict vigilance is necessary during the months of March-April to check the spread of fires in time during *tendu* season.**

10.6.3. **Training for NTFP collection: Training programs for proper NTFP collection, value addition and marketing will be organized in each round to help ensure their sustainable harvest and use. The Education circle should prepare and oversee the training modules.**

10.6.4. **Documentation of NTFP collection: The Beat Guards shall send monthly reports to the Range Forest Officer on the quantity of NTFP collected in their beats. The Range Forest Officer shall compile and send the details to the division office. The division office shall compile the figures for each species for the division with a view to monitor their collection and harvest, to sustainable limits.**

10.6.5. **Non-destructive collection of NTFP:** Unless detrimental to the wildlife conservation and site conditions, sustainable harvesting of herbs, non-destructive removal of flowers, fruit and other medicinal parts may be permitted by D.C.F. after the approval of the C.C.F. territorial concerned.

10.6.6. **Compartments having promising regeneration areas of NTFP species shall be identified and tended to remove congestion in the crop.**

10.6.7. **Considering site suitability and local needs; NTFP species shall be given due place (20 to 25%) in various plantation schemes.**

10.6.8. **No NTFP trees shall be marked for felling during the coupe working under various working circles.**

Management of *Tendu*:

10.6.9. **Collection of *Tendu* leaves:** *Tendu* is the prominent revenue generating NTFP of this tract. *Tendu* leaves are used for manufacturing *Bidis*. The collection season of *Tendu* leaves is short, and is hardly a month, from the last week of April to the last week of May.

10.6.10. **This tract has potential to yield 3700 standard bags of *Tendu* leaves amounting to annual revenue of the division about Rs.24.66 lakhs (year 2014).**

10.6.11. ***Tendu* leaves collection is monopoly of the state government under the Maharashtra Forest Produce (Regulation of Trade) Act, 1969. The *Tendu* leaf collection shall be carried out in the manner prescribed by the Principal Chief Conservator of Forests and the government from time to time.**

10.6.12. ***Tendu* leaves collection is an income generating activity for most local and tribal villages in the region. The local village communities shall be gainfully engaged on priority in *Tendu* collection in the division to support their livelihood.**

10.6.13. **Forests of the Protection Working Circle as well as A type areas in other working circles shall be excluded from *Tendu* units. The Deputy conservator of Forests shall accordingly organize the *Tendu* units.**

10.6.14. **Pruning of young *Tendu* plants does help in increasing the leaf yield. Pruning in the compartments may be allowed. However, felling of *Tendu* trees or branch lopping for leaf collection shall be prohibited and dealt with firmly.**

10.6.15. ***Tendu* regeneration:** In view of the importance of *Tendu* to support the livelihood of forest dwelling communities and its economic value for the region, sustainable management and use of *Tendu* by enhancing the regeneration is prescribed.

10.6.16. **Maintenance and improvement of *Tendu* in the forest crop composition is proposed by ensuring regeneration of *Tendu* and by carrying out tending operations.**

10.6.17. **Singling of shoots and soil working around *Tendu* seedlings is prescribed in the plantation and rootstock areas to promote the growth of *Tendu* seedlings along with the annual coupe working in the area-specific working circles.**

10.6.18. **Soil working for *Tendu* trees:** Digging of 30 cm deep trench encircling *Tendu* trees of diameter matching tree crown has been found useful to regenerate the species from root suckers. By doing so roots are injured and from which profuse suckers come out. Singling and tending shall increase the population of this species. The practice is proposed to regenerate areas deficient in *Tendu* species in stocking. ACF to monitor the progress every year in 5 ha. of area.

Management of *Moha*:

10.6.19. *Moha* collection: *Moha* trees were found in 99 compartments during the enumeration. The villagers in the tract have local system for allocation of *Moha* trees for collection of *Moha* flowers and fruits. In view of this traditional approach of allocation of tree by the local communities, it is advised to number the *Moha* trees and document the trees allocated to each *Moha* collector.

10.6.20. *Moha* regeneration: Artificial regeneration of *Moha* needs to be carried by planting at least 3 years old *Moha* seedlings in the plantation area.

10.6.21. Soil working of *Moha* trees: Digging of 30cm deep trench encircling *Moha* trees of diameter matching the tree crown has been found useful to regenerate the species from root suckers, by doing so roots are injured and from which profuse shoots come out. Singling and tending will increase the population of this species. The practice is proposed to regenerate areas deficient of *Moha* in stocking.

10.6.22. *Moha* is prescribed to be included in the list of species prescribed in various area specific working circles.

*Moha* Flower:

10.6.23. i) Use and Nutritive Value: *Moha* flower is a rich source of sugar, vitamins and calcium. The flower, in its ripe form, has almost 73% sugar and is, therefore, even a better medium for fermentation than grapes. *Moha* flower is eaten raw or cooked. This is also eaten after frying or baking into cakes. More usually, 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 jelly like. It is eaten with rice, tamarind, grains or other food or as sweetmeat. Dried *Moha* flower is also boiled with rice and mixed with wheat flour and this provides a wholesome food. After drying, it becomes valuable food additive to diet. *Moha* flower is largely used in the preparation of distilled liquor also. This liquor is actually the beer of India having strong smoky foetid odour, which disappears on aging. It is reported to excite gastric irritation and produce other adverse effects. Redistilled and carefully prepared liquor is good quality without having adverse effects and closely resembles to Irish Whisky. The corollas were in the past, exported, to France for distillation of cheap brandy. However, the French Government in order to protect their home industry prohibited the import of the same. Subsequently, it was imported by Europe for feeding pigs.

ii). *Moha* spirit prepared by distillation of liquid containing fermented *Moha* flowers is the most important alcoholic drink in many of the areas. It makes a potent drink and efforts are required to be made to refine it in modern distilleries. The flower is also used for the preparation of certain kinds of non-alcoholic food drink by some tribes. The flower is also used for the preparation of vinegar. *Moha* having appreciable proteins and vitamins has valuable nutrition content.

iii) Syrup of good quality is prepared from the corollas by extraction with hot water clarification with activated charcoal and evaporation under vacuum. The syrup with very high sugar content (61%) has a golden yellow colour with the odour of fresh flower. It is a substitute for honey. Apart from human consumption, *moha* flower offers an excellent food to the livestock and wild animals as well.

iv) Nutrition analysis of flower showed digestible crude protein 3.08 %, total digestible nutrients 73.7% and starch equivalent to 53.1 %. The flesh of animals particularly of pigs, fed on *Moha* flowers, acquires a delicate flavour.

*Moha* Fruit:

10.6.24. i) Use and Nutritive Value: A ripe fruit has cream coloured epicarp, which is edible. *Moha* berries were eaten raw or cooked. Cattle, sheep, goats, monkey and parrots also eat them. They have medicinal value as well. Fruit fallen on the ground are easily attacked by insects and ants thus becomes unfit for human consumption.

ii) The *Moha* seed oil. Forest tribes use it for cooking purpose, as illuminance and hair oil, use a thick oil light yellow in colour and extracted from the seeds. It is also used in the manufacture of soaps, particularly, laundry chips. In many areas it is also used as an adulterant for 'Ghee' for which it is clarified with butter mark to mask the disagreeable colour. The oil finds use in medicines also.

iii) Crude oil has a deep colour, high acidity, unpleasant odour and bitter taste. Refining and hydrogenation yield product similar to mutton tallow or cocoa butters. Oil having acid value below 13 may be refined by treatment with caustic soda and that with higher acid value is extracted with alcohol and further treatment with alkali. Refined oil finds use in the manufacture of lubricating grease and fatty alcohol. The oil is also used for candles, as batching oil in Jute Industry and as a raw material for the production of stearic acid.

iv) The yield of oil from the seeds depends on the efficiency of the equipment employed for crushing them. It is 20-30% of the weight of the kernels when crushed in '*ghanis*', 34-37% in expellers and 40-48% when extracted by solvents.

v) *Moha* oil shall have a set of characteristics. For this purpose ISI standards have been prescribed which are as below.

Table No. 10.2  
Table Showing *Moha* Oil Properties:

Sr. No.	Characteristics	Grade		
		I	II	III
1.	Moisture and insoluble impurities% by mass max.	0.10	0.25	0.50
2.	Color in a ¼ in a cell on the Loviband scale expressed are Y + 5R not deeper than.	0.20	30	50
3.	Refractive index at 40° C	1.459	to	1.460
4.	Sp.gravity at 90°F /30°C	0.862	to	0.875
5.	Saponification value	187	to	196
6.	Iodine value	58	to	70
7.	Unsaponification matter % by mass	2.0	3	3.0
8.	Acid value max	0.5	20.0	>20

10.6.25. Yield: The *Moha* yield data collected by the MVSS Chandrapur are given below.

i). *Moha* trees starts bearing flowers and fruits between 10<sup>th</sup> to 15<sup>th</sup> years of planting. A study with reference to the yield of *Moha* flowers and fruits has been conducted by the MVSS, Chandrapur in comptt.No.195 in Tadgaon Range of Bhamragarh Forest Division in the year 1992. The trees of different shapes and girths were selected for the purpose of this study. Results obtained are given below.

Table No. 10.3  
Table Showing Yield Of Moha Flower And Fruits

Weight in Kg.			
Sr. No.	G. B. H. in Cm	Flower	Seed
1.	076 - 090	06.00	1.20
2.	091 - 105	10.00	1.00
3.	106 - 120	11.25	2.00
4.	136 - 150	13.30	2.75
5.	151 - 175	13.00	3.80
6.	176 - 190	13.00	4.00
7.	206 - 220	20.00	4.30
	Average	12.94	2.72

(Note:As year 1992 was not a good seed year, the average obtained above is on lower side.)

ii). **The rates of royalty in Rs/Qtl. Of Moha flower and seed as decided by the Government for the years, 95-96 to 1999-2000 is Rs.3/Kilo.**

iii) **As per the tree enumeration carried out by FRSS Amravati, the number of Moha trees/ha having gbh > 45 cm is 4.9. On the basis of the study mentioned above expected yields of flower and seed come to 42.4 kg/ha and 8.55 kg/ha respectively. Estimated yield for Amravati Forest Division forest area is 2377.19 tons and 955.92 tons respectively. However, the phenological character of the species is that flowering and fruiting generally occur alternate years or twice in three years.**

10.6.26. Formation Of Units And Coupes: **The range shall be the unit of working for the purpose of this working circle. Since operation is to be carried annually throughout the area and so the unit will be the coupe in this case. Individuals are presently doing the collection of Moha flowers and seeds. Normally they confine themselves around their village only to collect Moha flower and seeds. As per latest amendment to Panchayati Raj Act, the ownership of the minor forest produce in schedule areas is vested with gram panchayat. The collection and disposal of produce is to be carried out by the gram panchayat as decided by the concerned gram sabha. In the non-scheduled areas, for large-scale operation, collection may be done either by JFMCs or any other agency under terms and conditions as decided by the Government.**

10.6.27. Market: **Moha flower and seed come under Monopoly Act and so the collection of Moha flower and seed is carried out by people and purchased by the TDC. It would be better to involve the industries using the Moha in the procurement through JFMs, so that better price can be made available to the collectors.**

10.6.28. Other Regulations:

i) **Compartment wise list of Moha trees shall be prepared and maintained at beat, round and range levels.**

ii) **One of the important reasons of forest fire is the burning of leaf litter on ground under Moha trees by the people to collect Moha flower. Therefore, before the start of flower falling, the ground under the Moha tree crown shall be cleaned with the cooperation of villagers and chaukidars. This may be treated, as one of the most important duties of the Forest Beat Guard, failure in it and occurrence of fire shall be viewed seriously.**

iii) **The measures for enhancing the production and productivity by local means shall be explored and taken up.**

Gum:

10.6.29. Use and Value: **Kulu (*Sterculia urens*), Dhaoda (*Anogeissus latifolia*) and Salai (*Boswellia serrata*) gums are the main sources of gum production in this tract. These are used in medicines, chemicals, cosmetics and food industries. Salai gum is mostly used as incense and is said to be used in the Indian medicines for rheumatism and nervous diseases. It has the possibility of becoming an important substitute for imported Canada balsam, used as mounting media in the preparation of microscopic slides. This gum is very similar to turpentine oil. Varnish and paints prepared from it have been found to be suitable. It may also be suitable in the manufacture of elastic adhesive, lacquers, oilcloth compositions, ink and perfumery. Kulu gum is the costliest gum and is having export potential. Dhaoda gum is very good for the preparation of many food items. It is mostly used in the preparation of sweets. So it is in great demand before Diwali. Jaipur, Udaipur and Jodhpur are the big markets for consumption.**

10.6.30. Regeneration of Gum Yielding Trees: **NR of Gum Trees such as kulu, Dhaoda and salai shall be provided soil working along with other planted seedlings during coupe operations of area specific working circles.**

10.6.31. Soil Working of Gum Yielding trees:

- i) **Digging of 30cm deep trench encircling Kulu, Dhaoda and Salai trees of diameter matching the tree crown has been found to be useful to regenerate the species from roots; By doing so roots are injured and from which profuse shoots come out. Singling and tending will increase the population of this species. The practice is proposed to regenerate areas deficient of Kulu, Dhaoda and Salai in stocking.**
- ii) **Kulu, Dhaoda and Salai is prescribed to be included in the list of species prescribed in various area specific working circles.**

10.6.32. Yield: **The study of yield of gums has not been done in this tract. The production is low. No scientific method for tapping has been used so far in this area. This is a very potential field of employment generation and revenue earning. Besides, the regulations of the collection are very important from protection of forest from the fire point of view.**

10.6.33. Use of Ethephone To Increase Exudate Gum Yield:

- i) **Experimental tapping of gum from *Acacia senegal* was carried out at Central Arid Zone Research Institute (CAZRI), ICAR India and study of the properties of the gum was made. An important finding of the CAZRI Scientists has been the observation, that gum exudation from most of the trees can be increased (nearly doubled), by injecting the plant hormone ethephone (2- Chloroethyl Phosphonic acid) into the tree.**
- ii) **Ethephone, a plant growth regulator has been known to be a precursor of ethylene, which accelerates the ripening of the fruits and increases boll opening in cotton plants. It was for the first time that the CAZRI Scientists have shown its effect on increasing gum yield from trees.**
- iii) **While using ethephone injection, it is not necessary to scar the tree trunk and exudation starts due to abscission of cellulose tissues of various sites of the tree. Increase in exudation of gum when ethephone is injected, suggests that the gum is a normal metabolic product in certain plants, which is already present as sap in gum ducts. When cellulose cells are broken due to ethephone, creating abscission of gum ducts at several points, gum ooze out at such points.**
- iv) **It has been observed that this method causes minimum injury to the tree and exudation is not confined to a particular site (e.g. place of blazing of the stem) as in the case of conventional method of gum tapping.**
- v) **Similar experiments shall be carried out in the field to have a fair understanding on the efficacy of Ethephone on gum yielding trees.**

10.6.34. Tapping Rules: **The rules for tapping, derived by the FRI, Dehradun, are as follows:**

- i) **The tapping season will commence from November to end of May each year. No tree below 90 cm in girth will be tapped.**
- ii) **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.**
- iii) **Only trees above 90 cm in girth at breast height will be tapped.**
- iv) **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 7<sup>th</sup> year after the commencement of tapping season and will continue for another period of 3 years.**
- v) **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 7.5 cm wide blade. The blaze is made 0.6 cm deep in the bark.**
- vi) **Blaze may be made horizontally leaving approximately equal space between the blazes. The blazes should not have any loose fiber. The lower surface of the blaze should be slightly slopping outwards to avoid lodging of guggul in the blazed pocket in case initial blazing is done by edge.**
- vii) **The *guggul* starts oozing out soon after blazes are made and may be collected initially after a month i.e. by about December when the blazes may also be freshened. Subsequent collections and freshening may be done at fortnightly up to May. Thus 12 freshening may be required to be made during the year.**
- viii) **In each freshening, the lower surface is not to be freshened. The edges may be scraped so that only 3.8 cm is increased on either side in width at the end of 12<sup>th</sup> freshening. This means that about 0.3 cm should be scraped off either side in width in each freshening.**
- ix) **The lowest row of blazes will be at one meter above the ground level. The next row of blazes will be made at the height of 60 cm from the lower i.e. at a total height of 1.6 meter from the ground level. The vertical portion of the blaze of upper row will alternate with similar portion of the row and no two blazes of the two rows will be directly one above the other.**
- x) **The number of blazes to be made on each tree will depend on its girth at breast height as given below:**

Table No. 10.4  
No. of Blazes On Each Tree

Sr. No.	Girth at breast height	Max. No. of blazes to be made on each tree
1.	0.9 m to 1.3 m	2
2.	1.3 m to 2.0 m	3
3.	2.0 m to 3 m	4
4.	Over 3 m	1 blaze for every 45 cm girth in addition to category 3 above

- a) **No fresh blaze will be made on the partially healed up surface or old wounds.**
- b) **Each blaze will be in a shape of parabola with a 2.5 cm. wide base. The curved side of the parabola will be upwards and of height not more than 7.50 cm and the depth of the blaze will not exceed 0.6 cm in the wood.**
- c) **At the end of the season, the height of the blaze shall not be greater than 12.50 cm. Maximum permissible dimension of each blaze shall be 10 cm x 12.5 cm x 0.6 cm in width, height and depth respectively.**
- d) **Since the tapping is to be done continuously for three years the total height of the blaze at the end of three years of tapping will be 37.5 cm, the width and depth remaining the same.**
- e) **In the second cycle i.e. in the 7<sup>th</sup> year (after three years rest) new blazes will be made in the same way in the unblazed portion, in between the blazed portions of the first cycle. This blazing will continue for another three years in the manner described above and the operation will be repeated till unblazed portion is fully covered.**
- f) **The above measures shall be implemented in certain areas to imbibe new techniques to the gum collectors by training the people and by monitoring the progress periodically.**

10.6.35. Grading: **The collected gum is graded into three classes:**

- i) **White,**
- ii) **Yellowish,**
- iii) **Black coloured.**

**White coloured gum fetches higher price in the market compared to yellowish and black gum. Yellowish gum fetches less price as compared to white one. Black gum fetches the lowest price. When gum is collected it is a mixture of all the three grades. By grading the gum the trader is able to assess correctly and offers correct price. So skill for grading is provided to the people by organizing training to the gum collectors. The colour of the gum is dependent upon the climatic conditions. It is said that clear sky in the night will exude white coloured gum.**

10.6.36. Formation Of Units And Coupes: **Range is the unit. Each unit will be divided into three annual coupes details of which will be given in Appendix No. LXVII B of Volume II of this plan. The working cycle will be of three years.**

10.6.37. Agency: **As per latest amendment to Panchayati Raj Act, the ownership of the minor forest produces in schedule areas is with gram panchayat. The collection and disposal of that is to be carried out by the gram panchayat as decided by the concerned gram sabha. In the non-scheduled areas, for large-scale operation, collection may be done either by JFMCs or other agency under terms and conditions as decided by the Government.**

10.6.38. Market: **There is monopoly purchase by TDC under the provisions of Monopoly Act. Besides, the export of raw or finished goods shall be explored.**

10.6.39. Other Regulations:

- i) **The compartment wise list of such trees shall be prepared and maintained at beat, round and range levels.**
- ii) **Cleaning around the trees to facilitate gum collection and to avoid fire, shall be done.**
- iii) **Gum producing trees shall be reserved from felling.**
- iv) **A strict watch is necessary to enforce tapping rules and check unauthorized collection of gum and tapping during the period of rest.**

10.6.40. MYROBALENS USE: **These NTFP is used in many ways. *Hirda, Beheda* and *Amla* are most common amongst Myrabolons. These are of high medicinal value and are used in many Ayurvedic medicines. *Hirda* and *Beheda* are given to children in villages invariably for cold, cough and stomach disorder.**

10.6.41. YIELD: **So far no study has been conducted to know the yield of fruits for trees of such species.**

10.6.42. FORMATION OF UNITS AND COUPES: **The range shall be the unit. Since working is annual and covers the entire area and so unit will also be the coupe.**

10.6.43. AGENCY FOR HARVESTING: **In the non-scheduled areas, for large-scale operation, the units shall be given to JFMCs.**

10.6.44. Market: **All probable industrial consumers shall be identified and quality grades be fixed and department shall act as a facilitator between JFMCs and consumer.**

10.6.45. Other Regulations:

i) **The detailed list of such species shall be prepared and maintained at beat, round and range levels.**

ii) **These species shall be excluded from felling.**

10.6.46. Management of Lac: 1. *Lac* Collection: **The *Lac* collection is not in practice in Amravati Forest Division. It has potential to add substantially to the returns of the local inhabitants. Palas and Kusum trees serve as good host for the Lac insect, Palas is in plenty in degraded tracts of the division. The Lac is collected by the people. It provides additional source of income to the local farmers and provide employment opportunity to landless poor in the area.**

10.6.47. Formation of Lac units: **The units for collection of lac are prescribed to be co-terminus with the range boundaries to ensure effective monitoring and control. Each unit prescribed to be sold by public auction.**

i) **The local JFMCs and FLCS and other village bodies shall be given first opportunity of collection, failing which units may be sold by public auction.**

ii) **The training in collection, grading and preliminary value addition will multiply the returns of people.**

iii) **Obtaining brood Lac and growing them on the Kusum trees in the first instance shall be carried out departmentally.**

10.6.48. Medicinal Plants: **The important medicinal plants found in this division are *Asparagus racemosus*, *Chlorophytum tuberosum*, *Equisetum sp.*, *Hygrophila auriculata*, *Bauhinia diffusa*, *Terminalia bellerica*, *Terminalia chebula*, *Emblica officinalis*, *Soymida febrifuga*, *Solanum violaceum*, *Gloriosa superba*, *Plumbago xeylanica* *Cassia absus*, *Holarrhena antidysenterica*, *Hemidesmus indicus*, *Helicteres isora*, *Evolvulus alsinoides*, *Vernonia cineraria*.**

10.6.49. Management of Safed Musli: **Safed musli (*Chlorophytum borivillianum* Family – *Liliaceae*): A herb with linear leaves appearing on the ground with the advent of summer rains. Flowers are white in colour. It is a perennial with fleshy roots/root-tubers.**

Common Name: **Safed Musli.**

Location: **Basin of Khandu**

Part Used: **Tuberous Root**

**Safed musli** is collected and sold to the local traders, which is dried and debarked and sold in the Delhi market. Till 2 years back it used to fetch Rs. 600/kg. for dried material., Since it is an endangered species, all collections from the forest are illegal. People be encouraged to prepare nurseries and plantations. **Safed musli** contains an alkaloid sapoginine, which is of medicinal value.

SECTION 10.7. RESEARCH WORKS:

10.7.1. **There are so many Non Timber Forest Produce and Medicinal Plants in the forest which are unidentified and untapped. The efforts of the department shall be to explore them and manage them scientifically. Identification of medicinal plants in the field shall be taken up for study immediately with the help of the ethno botanists.**

SECTION 10.8. OTHER IMPORTANT PRINCIPLES AND PROCEDURES:

10.8.1. **The following are important principles and procedures.**

10.8.2. **The annual estimates for collection of Non Timber Forest Produce and Medicinal Plants shall be made based upon the experience.**

10.8.3. **The Chief Conservator of Forests shall approve the annual estimates for the collection of NTFP.**

10.8.4. **The Range Forest Officer for the respective range shall issue the passes for collection of NTFP to the lease and keep record of the collection etc.**

10.8.5. **The Non Timber Forest Produce and Medicinal Plants lease units shall have distinct boundaries.**

10.8.6. **NTFP collection estimates shall be based upon the inventories of forest resources.**

10.8.7. **Scheme shall be formulated for improving yield of Non Timber Forest Produce and Medicinal Plants e.g. plantations, protection against disease etc.**

10.8.8. **Measures shall be taken to maintain and improve the present output of the Non Timber Forest Produce and Medicinal Plants.**



## CHAPTER – XI

### WORKING PLAN FOR WILDLIFE (OVERLAPPING) WORKING CIRCLE

#### SECTION 11.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE :

11.1.1.1. National forest policy 1988 aims at conserving the natural heritage of the country preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources of the country. "Forest management should take special care of the needs of wildlife conservation and forest management plans should include prescriptions for this purpose. It is specially essential to provide for `corridor` linking of the protected area in order to maintain genetic continuity between artificially separated sub sections of migrant wildlife.

11.1.1.2. For better management of wildlife and to preserve the bio-diversity, creation of protected areas (PAs) and their specific management practices are in force in approximately 4% of the forest area of the country. But wildlife does not know the geographical boundaries. They are found in forest areas other than protected areas in varied proportion.

11.1.1.3. Amravati District is well known for its wildlife areas of Melghat Forests. The tract dealt with is outside Melghat area. As per the Government Notification No.WLP-1087/103442/F-5 date 14<sup>th</sup> January, 1988, Wadali, Malkhed Game Reserve has been declared. The said area is in Amravati forest range and encompasses the reserved forests of 4368.53ha "A" class and 2709.41ha "C" and 7248.81ha revenue areas totaling 14416.75ha within the limit of 27 villages.

11.1.1.4. The wildlife concerned encompasses the entire tract. Hence, an overlapping wildlife working circle has been constituted which includes entire forests of this division.

Sr. No.	Name of Range	Range Area	Area in WC
1	Amravati	10139.947	Area Under Wildlife Overlapping Working Circle is whole Division Area.
2	Chandur Rly.	11345.739	
3	Paratwada	8145.115	
4	Morshi	12201.235	
5	Warud	10199.845	
Total Area of The Division		52031.881	

#### SECTION:11.2: GENERAL CONDITION OF FAUNA AND FLORA :

11.2.1.1. The forest areas with present Amravati Forest Division are found in scattered and small to medium blocks of forests. Nevertheless, ample number of wildlife is found in these forests. Now a day these forests areas are in proximity to human settlements and forest areas are close to agricultural areas and also the approaches to these forest areas have become more convenient due to network of roads both pucca and kaccha roads. Earlier most of the forest areas were declared as grazing lands and grazing of cattle have been continuously being practiced for known history of 140 years. These areas also suffer from acute water scarcity during summer. Therefore, wildlife in these areas were under tremendous pressure of biotic interference. These factors have resulted in depletion of wildlife both floral and faunal.

11.2.1.2. **The wild animals noticed in the tracks are:**

- 1) **Carnivora :- Leopard (*Panthera pardus*), Hyena (*Hyaena hyaena*), Jackal (*Canis aureus*), Indian Fox (*Vulpes bengalensis*), Jungle cat (*Felis chaus*), Sloth bear (*Melursus ursinus*), Wild boar (*Sus scrofa*),**
- 2) **Herbivora :- Black buck (*Antelope cervicapra*), Spotted deer (*Axis axis*), Blue bull (*Boselaphus tragocamelus*), Common Langur (*Presbytis entellus*), Indian Hare (*Lepus nigricollis*).**
- 3) **Aves :- Apart from the common birds the following avi-fauna are observed, Pea fowl (*Pavo cristatus*), Grey jungle fowl (*Gallus sonneratii*), Painted partridge (*Francolinus pictus*), Common quail (*Conturnix spp*), Crow pheasant (*Centropus sinensis*), Golden backed woodpecker (*Dinopium bengalensis*).**

11.2.1.3. **The floral species found have been enlisted under the "Botanical plants found in Amravati Forest Division. The tract dealt with has been the natural habitat of a variety of wild animals. The numerical strength present has reduced to the alarming extent mainly due to excessive biotic pressure. The flora description of the track has been given in Chapter-II.**

**SECTION : 11.3 : SPECIAL OBJECTS OF MANAGEMENT :**

11.3.1.1. **The priority of National Forest Policy is ecological balance and therefore management of forests is to be done for the same. Since wild animals are the part of the ecosystem and therefore, their management is essential. So far management has economic considerations and so wild animals were ignored and they were managed for entertainment. On recognizing the fact that wild animals are essential for the survival of living being as becoming an important part of ecosystem, the orientation of management of wildlife is changing very fast. Due to some limitations, the intensive management practices are confined to protected areas only. However, time has come to realize the fact and to manage it in a rotation way is essential in non-protected areas as well.**

11.3.1.2. **The conservation and protection measures are required to be taken throughout the forest areas. Keeping this aspect into view, the special objects of management decided are as follows :**

- (i) **To preserve and develop the non-protected habitat for existing wild animals in this tract.**
- (ii) **To develop infra structure for existence and development of wild animals, such as water holes, Anicuts, Salt licks etc.**
- (iii) **To educate and motivate people for protection and conservation of wild animals and thereby providing an environment of security to the wild animals.**

**SECTION : 11.4 : LEGAL POSITION:**

11.4.1.1. **Wildlife (Protection) Act, 1972 is applicable for entire Maharashtra. Indian Forest Act 1927 also deals with wildlife. Maharashtra Wildlife (Protection) Rules, 2014 are applicable. Maharashtra Forest Rules, 2014 under IFA, 1927 hunting of wild animals has been completely banned as per the amendments made to the Wildlife (Protection) Act, 1972 in the year 1991 are in vogue.**

**SECTION : 11.5 : METHODS OF TREATMENT :**

11.5.1.1.

- (i) **Wildlife management principles need to be applied for non-protected area. For food and water requirements fodder and fruit trees plantations along with creation of water holes at strategic points be carried out. Effective protection measures needs to be taken in potential wild life areas.**
- (ii) **Informative hoardings on the importance of wild animals and its protection will be at strategic locations. 5 large hoardings at strategic locations per range per annum each to be displayed for 60 days.**

- (iii) **Mass awareness programme shall be taken up to explain the reasons of depletion of wild animals and the ways to restore the status of wildlife in the tract to the people. This will include 3 works shops, 2 seminar, 5 trainings and 1 study tour in each range per annum.**
- (iv) **To highlight the necessity and importance of wildlife to the society are explained by using stories of "Panchatantra" through audio-visual means. This will be carried out by showing 6 wild life films in different JFMs villages per range per annum. One vehicle by name "CHITRA RATH" giving information of wild life and Govt. schemes to be displayed in villages from October to June in the division.**
- (v) **People should be made aware of the Acts and Rules for the protection of the wild animals. This will be done through distribution of 3 pamphlets and 3 folders each 25000 per annum.**

#### 11.5.1.2. ESTIMATION OF WILD ANIMAL POPULATION.

**Estimation of wildlife will be carried out every four yearly by using transect line system and Random evidence collection for carnivore's.**

**One transect line at least in every beat covering different habitats will be laid. The transects should be visited at least once every year. Period and time will be decided by the Deputy Conservator of Forests of the division and pellet count, scat encounter rates be done on these transects. These prescriptions shall be explained to the field staff and shall be followed strictly.**

#### SECTION : 11.6 : OTHER REGULATIONS :

**11.6.1.1. Area will be strictly and effectively fire protected. Publicity for fire protections needs to be done through various audio visual media. One vehicle along with loud speaker to be moved in every village during fire season for sending message about protection of forests from fire.**

**11.6.1.2. Every person residing in or within 10 Km of the protected area and possessing a firearm shall register his name with the Chief Wildlife Warden.**

**11.6.1.3. Available grazing land of each village will be divided into three parts and practice of Rotational Grazing be practiced so as to assure seeding of grasses in the area and rewards to be given to those villagers who practice it. Vaccination of the village cattles will be carried out to prevent the spread of diseases to wildlife. Village wise cattle census will be carried out during winter season, only those cattle upto the limit prescribed will be given grazing permits, more than that cattle will not be allowed for grazing.**

**11.6.1.4. Measures to reduce the cattle numbers are given top priority by encouraging the stall feeding and by strict implementation of the grazing policy. The person who comes forward to reduce their unproductive cattle shall be encouraged by giving rewards and also preference be given to him while selecting the beneficiaries for supply of productive milch cattle scheme.**

**11.6.1.5. Provide one set of tranquilizing equipment and capture and trapping equipments to each range within the first two years of the plan. Identify at least 10 members from the field staff would be trained and deputed to handle wildlife emergencies, wherever these incidents occurs in the Division.**

**11.6.1.6. Prepare a database in the occurrence and status of all the plants and animal species with the help of the Botanical Survey of India and Zoological Survey of India and also with the tie up with Sant Gadge Baba University, Amravati.**

SECTION 11.7 : WATER SUPPLY:

11.7.1. **In the areas where there is an acute shortage of water for wildlife, constructions of water holes will be made with provision to regular supply of water there. Creation of "Vantalao" to harvest water for the purpose of wildlife, construction of Anicuts, Bunds on nalas at suitable place should be made to provide permanent water holes to the wildlife.**

SECTION 11.8: ECO TOURISM:

11.8.1. **There are total four Nature Parks have been developing in the Amravati Forest Division. i.e. (1) Wadali Bamboo Park in Wadali Range, (2) Morshi Nature Tourism Centre in Morshi Range, (3) Malkhed Eco-Tourism Part in Chandur Railway Range and (4) Danodi Nature Park in Warud Range. All these project have been funded through Forest Department, DPDC and Maharashtra Tourism Development Corporation (MTDC).**



## CHAPTER – XI

### WORKING PLAN FOR WILDLIFE (OVERLAPPING) WORKING CIRCLE

#### SECTION 11.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE :

11.1.1.1. National forest policy 1988 aims at conserving the natural heritage of the country preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources of the country. "Forest management should take special care of the needs of wildlife conservation and forest management plans should include prescriptions for this purpose. It is specially essential to provide for `corridor` linking of the protected area in order to maintain genetic continuity between artificially separated sub sections of migrant wildlife.

11.1.1.2. For better management of wildlife and to preserve the bio-diversity, creation of protected areas (PAs) and their specific management practices are in force in approximately 4% of the forest area of the country. But wildlife does not know the geographical boundaries. They are found in forest areas other than protected areas in varied proportion.

11.1.1.3. Amravati District is well known for its wildlife areas of Melghat Forests. The tract dealt with is outside Melghat area. As per the Government Notification No.WLP-1087/103442/F-5 date 14<sup>th</sup> January, 1988, Wadali, Malkhed Game Reserve has been declared. The said area is in Amravati forest range and encompasses the reserved forests of 4368.53ha "A" class and 2709.41ha "C" and 7248.81ha revenue areas totaling 14416.75ha within the limit of 27 villages.

11.1.1.4. The wildlife concerned encompasses the entire tract. Hence, an overlapping wildlife working circle has been constituted which includes entire forests of this division.

Sr. No.	Name of Range	Range Area	Area in WC
1	Amravati	10139.947	Area Under Wildlife Overlapping Working Circle is whole Division Area.
2	Chandur Rly.	11345.739	
3	Paratwada	8145.115	
4	Morshi	12201.235	
5	Warud	10199.845	
Total Area of The Division		52031.881	

#### SECTION:11.2: GENERAL CONDITION OF FAUNA AND FLORA :

11.2.1.1. The forest areas with present Amravati Forest Division are found in scattered and small to medium blocks of forests. Nevertheless, ample number of wildlife is found in these forests. Now a day these forests areas are in proximity to human settlements and forest areas are close to agricultural areas and also the approaches to these forest areas have become more convenient due to network of roads both pucca and kaccha roads. Earlier most of the forest areas were declared as grazing lands and grazing of cattle have been continuously being practiced for known history of 140 years. These areas also suffer from acute water scarcity during summer. Therefore, wildlife in these areas were under tremendous pressure of biotic interference. These factors have resulted in depletion of wildlife both floral and faunal.

**11.2.1.2. The wild animals noticed in the tracks are:**

- 1) Carnivora :- Leopard (*Panthera pardus*), Hyena (*Hyaena hyaena*), Jackal (*Canis aureus*), Indian Fox (*Vulpes bengalensis*), Jungle cat (*Felis chaus*), Sloth bear (*Melursus ursinus*), Wild boar (*Sus scrofa*),**
- 2) Herbivora :- Black buck (*Antelope cervicapra*), Spotted deer (*Axis axis*), Blue bull (*Boselaphus tragocamelus*), Common Langur (*Presbytis entellus*), Indian Hare (*Lepus nigricollis*).**
- 3) Aves :- Apart from the common birds the following avi-fauna are observed, Pea fowl (*Pavo cristatus*), Grey jungle fowl (*Gallus sonneratii*), Painted partridge (*Francolinus pictus*), Common quail (*Conturnix spp*), Crow pheasant (*Centropus sinensis*), Golden backed woodpecker (*Dinopium bengalensis*).**

**11.2.1.3. The floral species found have been enlisted under the "Botanical plants found in Amravati Forest Division. The tract dealt with has been the natural habitat of a variety of wild animals. The numerical strength present has reduced to the alarming extent mainly due to excessive biotic pressure. The flora description of the track has been given in Chapter-II.**

**SECTION : 11.3 : SPECIAL OBJECTS OF MANAGEMENT :**

**11.3.1.1. The priority of National Forest Policy is ecological balance and therefore management of forests is to be done for the same. Since wild animals are the part of the ecosystem and therefore, their management is essential. So far management has economic considerations and so wild animals were ignored and they were managed for entertainment. On recognizing the fact that wild animals are essential for the survival of living being as becoming an important part of ecosystem, the orientation of management of wildlife is changing very fast. Due to some limitations, the intensive management practices are confined to protected areas only. However, time has come to realize the fact and to manage it in a rotation way is essential in non-protected areas as well.**

**11.3.1.2. The conservation and protection measures are required to be taken throughout the forest areas. Keeping this aspect into view, the special objects of management decided are as follows :**

- (i) To preserve and develop the non-protected habitat for existing wild animals in this tract.**
- (ii) To develop infra structure for existence and development of wild animals, such as water holes, Anicuts, Salt licks etc.**
- (iii) To educate and motivate people for protection and conservation of wild animals and thereby providing an environment of security to the wild animals.**

**SECTION : 11.4 : LEGAL POSITION:**

**11.4.1.1. Wildlife (Protection) Act, 1972 is applicable for entire Maharashtra. Indian Forest Act 1927 also deals with wildlife. Maharashtra Wildlife (Protection) Rules, 2014 are applicable. Maharashtra Forest Rules, 2014 under IFA, 1927 hunting of wild animals has been completely banned as per the amendments made to the Wildlife (Protection) Act, 1972 in the year 1991 are in vogue.**

**SECTION : 11.5 : METHODS OF TREATMENT :**

**11.5.1.1.**

- (i) Wildlife management principles need to be applied for non-protected area. For food and water requirements fodder and fruit trees plantations along with creation of water holes at strategic points be carried out. Effective protection measures needs to be taken in potential wild life areas.**
- (ii) Informative hoardings on the importance of wild animals and its protection will be at strategic locations. 5 large hoardings at strategic locations per range per annum each to be displayed for 60 days.**

- (iii) **Mass awareness programme shall be taken up to explain the reasons of depletion of wild animals and the ways to restore the status of wildlife in the tract to the people. This will include 3 works shops, 2 seminar, 5 trainings and 1 study tour in each range per annum.**
- (iv) **To highlight the necessity and importance of wildlife to the society are explained by using stories of "Panchatantra" through audio-visual means. This will be carried out by showing 6 wild life films in different JFM's villages per range per annum. One vehicle by name "CHITRA RATH" giving information of wild life and Govt. schemes to be displayed in villages from October to June in the division.**
- (v) **People should be made aware of the Acts and Rules for the protection of the wild animals. This will be done through distribution of 3 pamphlets and 3 folders each 25000 per annum.**

#### 11.5.1.2. ESTIMATION OF WILD ANIMAL POPULATION.

**Estimation of wildlife will be carried out every four yearly by using transect line system and Random evidence collection for carnivore's.**

**One transect line at least in every beat covering different habitats will be laid. The transects should be visited at least once every year. Period and time will be decided by the Deputy Conservator of Forests of the division and pellet count, scat encounter rates be done on these transects. These prescriptions shall be explained to the field staff and shall be followed strictly.**

#### SECTION : 11.6 : OTHER REGULATIONS :

**11.6.1.1. Area will be strictly and effectively fire protected. Publicity for fire protections needs to be done through various audio visual media. One vehicle along with loud speaker to be moved in every village during fire season for sending message about protection of forests from fire.**

**11.6.1.2. Every person residing in or within 10 Km of the protected area and possessing a firearm shall register his name with the Chief Wildlife Warden.**

**11.6.1.3. Available grazing land of each village will be divided into three parts and practice of Rotational Grazing be practiced so as to assure seeding of grasses in the area and rewards to be given to those villagers who practice it. Vaccination of the village cattles will be carried out to prevent the spread of diseases to wildlife. Village wise cattle census will be carried out during winter season, only those cattle upto the limit prescribed will be given grazing permits, more than that cattle will not be allowed for grazing.**

**11.6.1.4. Measures to reduce the cattle numbers are given top priority by encouraging the stall feeding and by strict implementation of the grazing policy. The person who comes forward to reduce their unproductive cattle shall be encouraged by giving rewards and also preference be given to him while selecting the beneficiaries for supply of productive milch cattle scheme.**

**11.6.1.5. Provide one set of tranquilizing equipment and capture and trapping equipments to each range within the first two years of the plan. Identify at least 10 members from the field staff would be trained and deputed to handle wildlife emergencies, wherever these incidents occurs in the Division.**

**11.6.1.6. Prepare a database in the occurrence and status of all the plants and animal species with the help of the Botanical Survey of India and Zoological Survey of India and also with the tie up with Sant Gadge Baba University, Amravati.**

SECTION 11.7 : WATER SUPPLY:

11.7.1. **In the areas where there is an acute shortage of water for wildlife, constructions of water holes will be made with provision to regular supply of water there. Creation of "Vantalao" to harvest water for the purpose of wildlife, construction of Anicuts, Bunds on nalas at suitable place should be made to provide permanent water holes to the wildlife.**

SECTION 11.8: ECO TOURISM:

11.8.1. **There are total four Nature Parks have been developing in the Amravati Forest Division. i.e. (1) Wadali Bamboo Park in Wadali Range, (2) Morshi Nature Tourism Centre in Morshi Range, (3) Malkhed Eco-Tourism Part in Chandur Railway Range and (4) Danodi Nature Park in Warud Range. All these project have been funded through Forest Department, DPDC and Maharashtra Tourism Development Corporation (MTDC).**



## CHAPTER – XI A

### WORKING PLAN FOR JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

#### SECTION 11A.1: BACKGROUND:

11A.1.1 The National Forest Policy 1988 envisages massive people's movement for conservation of forest resources. The Govt. of India issued directions to all the State Governments vide letter No. 621/89-PP dated 1<sup>st</sup> June, 1990 regarding framework for creating massive people's movement through involvement of village communities in protection and management of degraded forest lands. Participation management strategy envisaged in forestry sector is known Joint Forest Management (JFM).

11A.1.2 The Ministry of Environment & Forests of Govt. of India issued circular 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 Program. The Govt. of Maharashtra also issued guidelines vide Government Resolution No. SLF-1091/PK119/F-11 dated March 16, 1992 to constitute "JFM Committees realizing the fact that forest protection cannot be achieved without active participation and cooperation of local people. As per the guidelines of G.R. of 16<sup>th</sup> March 1992 instructions were issued for preparation of management plans for implementation of Joint Forest Management. Govt. of Maharashtra issued revised guidelines and frameworks for implementation of JFM program vide G.R. dated 25-4-2003. Later Government of Maharashtra also issued Guidelines for implementations of JFM program vide Government Resolution No. FDM-2011/no 100/F-2 dated 22-11-2011. The Govt. of Maharashtra under MREGS issued guidelines regarding implementing agency under which Joint Forest Management committee's were recognized as implementing agency vide Govt. Resolution No. MREGS/2011/PK63/EGS-1/Planning/Bombay, dated 8-1-2013, the GR is enclosed in Vol.II as Appendix No.XXXII.

11A.1.3 In Amravati Forest Division there are 1313 villages out of this 443 villages are adjoining forests. At present 68 JFM committees have been constituted. Out of these 64 JFMCs are registered and 36 JFM committees have been brought under Forest Development Agency. The quality of forests is degraded near human 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 11A.2: NEED FOR IMPLEMENTATION OF JFM:

In consonance with National Forest Policy 1988, special emphasis is given to JFM due to increasing biotic pressure, depletion of soil due to soil erosion and degradation of forests. Demand is increasing for timber and fuel wood. Heavy grazing pressure, repeated forest fires, diversion of forest land for agriculture, industries, housing and irrigation projects etc are putting strain on forests. To check further loss of forest cover and forest area and to regenerate the degraded forests, the below mentioned aspects are given thrust while implementing JFM Program.

- (1) Protection and management of forests by developing a sense of ownership and belongingness of forests among the local people, to regenerate degraded forest areas with the active participation of local people.
- (2) Increasing the vegetation cover and to carry out soil and moisture conservation works with the active co-operation of local people.
- (3) Involving local people in forest protection and to provide tangible and intangible benefits in lieu of their cooperation in forest protection.

### SECTION 11A.3: SOCIO-ECONOMIC CONDITIONS:

The total human population of the Amravati district is 26, 84,449 as per 2011 census. Population density is 52 per sq. km. ST population constitutes 9.10% and SC population 14.46% of total population. As per 2010 data livestock population is 4, 60,842 of which cows and bullocks constitute 27.13%, Buffalos- 10.04%, sheep and goats- 62.82%. The population density of livestock in the district is 8.86/sq.km.

### SECTION 11A.4: STATUS OF JFM:

11.4.1 The JFM in Amravati Forest Division was started in the year 2003-04 under Maharashtra Forestry Project. The details of JFM implementation are given in the table below.

Details of villages under JFM in Amravati Forest Division.

Sr. No.	Range	No.of JFMC	No.of Registered JFMC's	Area allotted for protection (ha.)
1.	Amravati	11	11	2662.055
2.	Chandur Rly.	11	11	3732.422
3.	Paratwada	11	07	3638.743
4.	Morshi	21	21	3297.826
5.	Warud	14	14	2454.879
	Total	68	64	15785.925

The population depends on agriculture and allied activities for the livelihood and most of the SC, ST population are land less and work as agricultural labourers. The population adjoining forests mostly depend upon forests for day to day needs, naturally causing pressure on forests. The cattle populations also cause lot of pressure on forests for grazing. The local people hardly utilise forest area for stall feeding of their cattle. In some pockets grazing by sheep and goats is noticed and they cause extensive damage to the regeneration. Apart from local cattle, migratory cattle also exert pressure on forests in this 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 25<sup>th</sup> April 2003 shall be followed. At present there are 68 committees constituted in Amravati Forest Division. The total forest area allotted to these committees for protection is 15,785.925 ha.

11A.4.2 The details of plantations are carried out by JFM committees during last three years is enclosed in Annexure LXIX.

11A.4.3 Govt. of Maharashtra started one "Sant Tukaram Van gram Yojana" to encourage the participation of villages in Joint Forest Management. Works of JFM committees is evaluated on 17 parameters which include Forest Protection, Plantation works, Participation of women and students, Soil and water conservation works etc. On the basis of this evaluation district level committee under chairmanship of District Collector decides First, Second and Third ranking and cash prizes of amount Rs. 51000/- Rs.31000/- and Rs. 11000 is distributed to committees. Thereafter from these prizes winning committee's state level committee evaluates performance and state level ranking is decided. On state level cash prize of Rs. 500000/- Rs. 300000/- and Rs. 100000/- is distributed to committees who stood First, Second and Third. The list of prize winning JFM committees is at Annexure- LXX in vol. II

### SECTION 11A.5: SPECIAL OBJECTIVES OF MANAGEMENT:

- (1) To protect forests and to utilize degraded forest areas for productive purposes in order to meet the demand for fuel, fodder and timber requirements, of the people.
- (2) To rehabilitate and regenerate degraded forests and to check soil erosion.
- (3) To seek the cooperation and active participation of local people in forest protection, management and development activities.

SECTION 11A.6: PRINCIPLES AND ETHICS:

**Certain principles and ethics should be as followed as per guidelines for 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 is of the prime importance.**
- (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 11A.7 : TREATMENT PRESCRIBED FOR JFM:

**In the system of JFM the forest staff must know the principles and approach of JFM. The first and foremost thing is to convince the local people about the importance of forestry and their role in meeting daily needs of them. The villagers who are willing to take part in JFM program a memorandum of understanding shall be signed. DCF shall prepare Micro plans for the area to be assigned to concerned JFM Committee as provided in the GR dated 25<sup>th</sup> April 2003 and guidelines issued by Govt. of India and the State Government 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 plans shall be sanctioned by competent authority.**
- The assigning of forest area to JFM committee and execution of works shall be strictly in accordance with the guidelines issued by Government of India as well as Government of Maharashtra.**
- MOU shall be signed regarding forest area assigned to JFM Committee and there should not be any ambiguity in terms and conditions.**
- The area allotted to JFM committee should be shown on the map and incorporated in the memorandum of understanding.**
- The Micro Plan 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 11A.8: ACTIVITIES TO BE TAKEN UP:

**JFM Committees should be involved to take up following activities in the area assigned to them.**

- (1) Stringent protection of forests allotted to JFM committee.**
- (2) Active participation of members of JFM committee in protecting, improving and developing forests.**
- (3) Protection of forests from fire, grazing and encroachment, collection of NWFP on scientific lines or non- destructive collection methods.**
- (4) Helping forest officials in patrolling and enforcement of law for forest protection.**
- (5) Scheme of supply of LPG, Bio-gas, Improved cattle, Solar cooker etc. be implemented in JFM villages which have resolved to protect forest from Illicit cutting, grazing, fire, encroachment and poaching.**

**For protection of forests from grazing, integrated efforts should be taken to improve the breed of cattle so that, the income may be increased. In this regard the Rural Development and other departments should be requested to help the JFM committees. 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 fire lines, wages for fireworks shall be directly remitted to JFM Committee after successful protection of forests from the fire. Necessary legal and moral help should be provided to members of JFM Committee for the protecting forests from illicit felling, encroachment, grazing, fire protection etc.**

#### SECTION 11A.9: ACTIVITIES TAKEN UP:

**11A.9.1 The details of plantations are carried out by JFM committees during last three years is enclosed in Appendix No. LXIX in Vol. II.**

**11A.9.2 Govt. of Maharashtra started one "Sant Tukaram Van gram Yojana" to encourage the participation of villages in Joint Forest Management. Works of JFM committees is evaluated on 17 parameters which include Forest Protection, Plantation works, Participation of women and students, Soil and water conservation works etc. On the basis of this evaluation district level committee under chairmanship of District Collector decides First, Second and Third ranking and cash prizes of amount Rs. 51000/- Rs.31000/- and Rs. 11000 is distributed to committees. Thereafter from these prizes winning committee's state level committee evaluates performance and state level ranking is decided. On state level cash prize of Rs. 500000/- Rs. 300000/- and Rs. 100000/- is distributed to committees who stood First, Second and Third. The list of prize winning JFM committees is at Appendix No. LXX in Vol. II.**

**11A.9.3 Scheme of Supply of LPG gas and improved cattle is implemented in the Amravati division as per directives of State Govt. Information showing number of beneficiaries of LPG and improved cattle is at Appendix No. LXXI in Vol. II**

#### SECTION 11A.10 : ACTIVE COOPERATION AND PARTICIPATION OF PEOPLE:

**It is the duty and responsibility of forest officials to create awareness among the members of Forest Protection Committee as well as villagers about the importance of forests, 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 conducting meetings, workshops and visits to successful areas shall be arranged to explain about the protection of forests and achievements in other villages. 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's members shall be made aware of their duties and responsibilities to have their active participation in the protection and management of the forests. The produce obtained from the assigned areas will play an important role for the improvement of economy of JFM village as well as restoration and improvement of the forest area.**

SECTION 11A.11: ROLE OF FOREST OFFICIALS:

**The role of forest officials in implementing of JFM is as the facilitator as given below.**

- (1) Providing technical inputs and support for the activities under JFM and ensure implementation of scientific forest management.**
- (2) Creation of awareness amongst the members of JFM Committee about the role and various benefits available.**
- (3) The forest officials shall act as facilitators for implementation of various developmental activities by other departments.**
- (4) The responsibility and benefit of local people should be thoroughly briefed by forest officials.**

**Joint Forest Management requires strong institutional capacity to make collaborative efforts for forest protection activities and make it successful in getting the economic returns and regeneration of the forests. Therefore the forest officials have to take adequate measures and precautions in formalizing participatory management. Various Government Resolutions, Orders and guidelines in relation to JFM are given in Appendix No. XXXII in volume II.**



CHAPTER – XI B  
FOREST PROTECTION (OVERLAPPING)  
WORKING CIRCLE

SECTION 11B.1 : INTRODUCTION:

The forest protection is one of the most important and difficult aspects of forest management. Lot of degradation of forest has already taken place due to increase in human and cattle population. The developmental works required diversion of forest land for cultivation, irrigation projects, industries etc. which resulted in shrinkage of forest area. This situation has created huge gap in demand and supply of forest produce. The forest of Amravati division has 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. In the division there are 95 beats which are now treated as hyper sensitive as per latest directions of State Govt. There are 136 saw mills in the division, most of them are at Amravati and few located Paratwad, Morshi, Warud & Anjangaon.

The forest offenders are agricultural labourers and the intensity of forest offences increases during lean season of agriculture, particularly during July to September when there is no work for agriculture labourers. Offenders indulge in forest offences prior to festival occasions such as Aakhadi, Pola, Dasehra, Diwali etc. they resort to illicit felling for easy money for festival celebration. In division the DyCF is assisted by 3 ACFs, 5 Territorial RFOs, 19 Round Officers, and 95 Forest Guards for protection of forests. They have been provided with vehicles. Check Nakas are established at strategic points with 24 hours working. In some of the places the forest offenders indulge in offences in groups and it is very much difficult to control them by a Forest Guard.

SECTION 11B.2 : SPECIAL OBJECTIVES OF MANAGEMENT:

- (1) To protect the forests from illicit felling, encroachment, fire and grazing.
- (2) To sensitize local people about forest protection and involve them in preventing forest offences.
- (3) To raise the moral of staff and strengthen their capabilities to deal with illicit felling, encroachment, poaching etc.
- (4) To develop database to monitor various offence cases.

SECTION 11B.3 : 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 JFM Committees. Total villages in Non-Buffer Forest Division are 1313 whereas, 95 Forest Guards are placed at various places to protect forests. For effective protection there is a need to seek the co-operation and involve local people in forest protection. Some of the effective measures are given below.

- (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 productivity of forests.
- (2) Regulation of grazing and controlling fire.
- (3) Seeking co-operation and active participation of local people in all operations of forest management and
- (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) **Improvement in communication facility and mobility of the forest staff.**
- (8) **Installation of new Check Nakas at hyper sensitive and sensitive points.**
- (9) **Patrolling sensitive forest areas along with the local people/ JFM Committee members.**
- (10) **Introducing Rewards, Awards and informer system and making forest offences high risk low gain process.**

**SECTION 11B.4 : PROTECTION MEASURES:**

**11B.4.1. A protection plan is to be prepared at division level at the start of new year in January for taking strict protection measures in pursuance of GR dated 8.5.2003. Protection plan will cover following issues.**

- 1. Joint patrolling with JFM committee members and staff of adjoining range, round and beat.**
- 2. Forest allowance to Police Patils in villages adjoining forests organizing Police Patil's meetings at range level.**
- 3. Checking weekly markets for prevention of illegal trade of NTFP and wildlife parts and products.**
- 4. Covering of furniture marts, private depots, small carpenter units etc. and monitoring through monthly returns, surprise checks and also prescribing registration and maintenance of records for such units.**
- 5. Monitoring the activities of habitual offenders.**
- 6. Armory and custody at every range headquarters. The personnel who have undergone arms training be provided with regular firing practice facilities with co-ordination of police department.**
- 7. Empowering officers above the rank of RFO with magisterial powers such as grant of custody, remand and for prevention of offences on lines of revenue department.**
- 8. Inspection and regular checking of water holes.**
- 9. Creation of secret fund for reward to informers, creation of intelligence network etc.**
- 10. Keeping round the clock vigilance in sensitive area through deployment of special protection force comprising of staff, ex-army personnel and laborers at the protection huts constructed at strategic points. Also outsourcing protection work to an independent agency such as security guards may be considered.**
- 11. Joint patrolling and meetings for exchange of information about offenders and more effective co-ordination through Tiger Cell.**
- 12. Supply of Mobile phone sets for easy access of information to Beat Guards, Round Officers, and RFO in sensitive area.**
- 13. In dealing with organized gangs if any engaged in illicit cutting and also in encroachment removal operations a special Task Force comprising of one Police Inspector, two Head Constables, two Constables, two Lady Constables be placed at the disposal of DCF for specific period during the year.**
- 14. A legal cell constituted under the control of DCF with the engagement of prosecutor on contract basis on lines of Police Department.**
- 15. Owing to the spurt of encroachments with the enforcement of the Scheduled Tribes and Forest Dwellers (Recognition of Forest Rights) Act 2006, the area under encroachment and those susceptible to encroachment need to be dealt with on priority.**

**11B.4.2. Inspection in transit :**

**Illegal transportation of forest produce should be checked by concerned staff as well as Mobile Squad staff.**

**11B.4.3 Special surprise checking and Nakabandi shall be organised on major district roads and known routes from Jungle to town through Mobile Squad and local staff once in month.**

#### 11B.4.4 Collection of intelligence and information:

The RFO/ Round Officers should frequently interact with villagers to collect information regarding illicit felling, encroachment, poaching, illegal grazing etc. through its intelligence network and keep that information, suggestions in a register in his personal custody. Through the intelligence network, village wise record of habitual offenders must be prepared by RFO in consultation with Beat Guard and Round Officer in the proforma given below and this register must be updated regularly.

#### Register of habitual offenders

Name & address of the offender	Previous record POR No./Qty/ Action taken	Modus - operandi	Photograph if available
1	2	3	4

11B.4.5. Disposal of petty offence cases: **Many forest offences are petty in nature and these can be tried summarily for easy disposal as per the provisions of Indian Forest Act 1927. The petty offence cases had been pending for long time on large scale. These cases should be disposed off by taking special drive.**

11B.4.6. Provision of lock-ups: **Some forest and wildlife offences are of non-bailable nature and for prosecution of offenders it is necessary to provide lock-up cells at every range head quarter. It is prescribed that lock-up cells shall be established at every range head quarter and will be manned with the adequate number of staff.**

11B.4.7. Creation of legal cell: **In order to have speedy disposal of forest offences to file and pursue court cases, a legal cell headed by one Forest Prosecutor may be constituted with supporting staff.**

11B.4.8. Rewards: **The existing provisions of rewards to subordinate staff for exemplary work in detection and prevention of offence cases need to be reviewed. The reward amount may be enhanced and maximum amount may be granted. It is proposed that the scheme may be extended to gazetted officers also. A secret fund should be used to gather intelligence and information.**

11B.4.9. Training: **Training to field staff shall be organised by DCF from time to time on the issues of various Acts, preparation of offence cases, tackling assault on staff, framing charge sheets, filing court cases, recording evidence etc. For this purpose help of police officers, ex-army men, advocates, forest officers, NCC officers should be sought to train field staff especially Forest Guards and Round Officers.**

11B.4.10. Check Nakas: **Check Nakas are established at various strategic points to control the transportation of illicit forest produce and other illegal activity. The Check Naka must be duly notified by competent authority and published for the benefit of public as well as law enforcing authorities. The check nakas should be manned round the clock and provided with effective modern communication facilities.**

11B.4.11. Patrolling : **To control illicit felling regular patrolling is essential in sensitive and hyper sensitive beats. Separate day and night patrolling around the sensitive, highly sensitive areas and on roads leading from jungle to towns shall be carried out. Record or register should be kept in range office regarding patrolling. ACF should supervise this type of patrolling and also he should participate in such patrolling at least once in the month.**

11B.4.12. Mobile Squad : **In Non-Buffer area at division level one Mobile Squad headed by ACF (Protection) with the staff of 2 Foresters and 3 Forest Guards along with a Jeep is available. Mobile Squad with head quarter at Amravati looks after forest protection under the control of the DFO, Amravati Forest Division. The DFO should closely monitor the work of mobile squad and should obtain weekly reports to monitor the protection activities.**

11B.4.13. Inspection of area of illicit felling: **The following time schedule has been prescribed for inspection of illicit felling area by the concerned officers vide Government Circular dated 8/5/2003.**

In situ value of illicit cutting at a place	Designation of inspecting officer	Period within which inspection should be completed
Up to Rs.50,000	RFO	3 days from detection/ receipt of intimation of detection
Above Rs. 50,000 but not exceeding Rs. 2,00,000	ACF	3 days from the receipt of information
Above Rs. 2,00,000 but not exceeding Rs. 5,00,000	DCF	3 days from the receipt of information
Above Rs. 5,00,000	CF	7 days from the receipt of information

11B.4.14. **The Government vide its letter No. TRS-1082/36/F-6, Dt. 8<sup>th</sup> 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.**

11B.4.15. **Wireless network: Presently there is a well established wireless network in this division with 1 Repeater and 10 Base stations at different places. In the present day communication has become easy and faster and the offenders making use of modern communication systems like mobile phones in committing forest offences. 35 walkie-talkie sets, 36 mobile phone sets and 65 PDA's have been provided to the staff of Amravati Forest Division. Proper and timely maintenance should be provided for the wireless network and modern communication gadgets.**

11B.4.16. **Mobility of staff: In Amravati Forest Division 9 Government vehicles are provided to DCF, ACF and RFO's. With the existing road network by using modern speedy vehicles, the forest offenders easily transport the illicit material. Some of the territorial RFOs have been provided with government vehicles. It is necessary to provide jeeps upto RFO level for effective forest protection.**

11B.4.17. **Provision of Arms: Some times offenders use modern weapons like fire arms in committing forest offences. For forest staff without modern weapons, it is difficult to prevent those offenders from committing forest offences. With a view to providing weapons to the forest staff the Government sanctioned 10, 9 mm pistols and 4 rifles to the staff for forest 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 involve in forest protection. Regular training camps to field staff should be conducted regarding use and maintenance of the weapons.**

11B.4.18. **Rapid Response Unit: A Rapid Response Unit has been established at Amravati in the Division to quickly respond and attend to the conflict situation created as a result of man-wild animal interface. The unit consists of one RFO, 1 Forester, 2 Forest Guards and 3 Vanmajur and is provided with a Bolero jeep accommodating a trap cage with space for equipment, attendants and staff, a tranquilizing kit for chemical immobilization, mobile phones, wireless handsets, GPS sets, and other necessary equipments.**

11B.4.19. **Territorial Inspections:**

1. **Beat checking: In order to have stringent protection of forest it is necessary that the field 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. 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 Officer: Every Beat Officer 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 1<sup>st</sup> 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 Beat Officer are carrying proper patrolling of the forests of their jurisdiction or not. He should inspect a specific portion covering at least 1/4<sup>th</sup> of the area of the Beat once in 6 months and the findings are required to submitted to Dy. Conservator of Forests and Chief 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 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 in content in IPC, CRPC, etc for effectiveness of the case.**

2. Transit rules for Forest Produce: **The regulation of transportation of forest produce is under Bombay Transit of Forest Rules 1960 published by the Agriculture and Forest Department under No. IFA-1057/22947-(VI), Dt. 23<sup>rd</sup> April 1960. The Government of Maharashtra vide its notification no. 1083/91822/(II)/CR 87/F-6, Dt. May 30<sup>th</sup> 1995 has amended Section 61 of Indian Forest Act 1927 making the law more stringent. Under this amendment some of the Assistant Conservator 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.**

**The provisions of Government vide letter no. TRS-1089/PK-27/89/ F-6, Dt. May 14<sup>th</sup> 1990 stated that the transit pass shall be issued within 45 days from submission of application.**

#### 11B.4.20 PRESCRIPTIONS FOR PROTECTION:

**For effective protection of forest the following prescriptions are made.**

- (1) **Review the offence cases beat wise, every month. Review the *varas*, *bevaras* offence cases monthly, efforts shall be made to find out the offenders in each *bevaras* case.**
- (2) **Every *varas* case having more than Rs.10,000 worth forest produce/loss to the forest is invariably submitted to the court within the prescribed time. Delay in the submission of charge sheets in the courts should be viewed seriously.**
- (3) **Use IPC provisions for the effective control of the illicit felling.**
- (4) **The data related to offence cases shall be analyzed with the help of computers using available software.**
- (5) **Monitor the occurrence of all the offence cases daily through wireless.**
- (6) **Identify and list all the paths used for the transportation of illicit material.**
- (7) **Place effective patrolling squad at all important routes to prevent the transportation of illicit material.**
- (8) **Emphasis shall be made to arrest and prosecute the offenders rather than seizing the material.**
- (9) **Plan in such a way to have young guards in the hyper sensitive areas.**
- (10) **History sheets of all the offenders along with their photo and bio-data are maintained at Round, Range and Division level.**
- (11) **Prepare list of offenders, showing the offence cases involved by him, against each offender.**
- (12) **Use Cr. P.C. 110 provisions with respect to habitual offenders.**

- (13) Provisions of IPC 395 shall be used by registering the complaint in the police station for the offences wherein five or more than five offenders are involved. The DCF shall co-ordinate with the Superintendent of Police to see that stringent sections of IPC will be used in the F.I.R.
- (14) Every beat guard shall maintain a register of stumps in the requisite proforma. Every stump is registered by a serial number followed by year, for example, if tree number is 129/08. Here 129 is tree number and 08 - is year. Every year from January 1<sup>st</sup>, onwards start the new series. After one year all the high stumps be dressed to ground level to obtain good coppice. The supervisory officers, during the beat inspection, verify the registered stumps and unregistered stumps. The beat officer shall be held responsible for non-registering the illicit stumps.
- (15) Every range and division office shall maintain the Xerox copies of the judgments of all forest cases for the guidance and improvement purposes.
- (16) Court Guard duties be assigned to a special duty FG for each Range Office and as well as Division office to monitor the dates and for timely communication to the witnesses.
- (17) The RFO shall collect the beat *khairiyat* report from each Forest Guard and Round Officer monthly and shall submit Range *khairiyat* report to the DCF every month and DCF should monitor the report for constant vigilance.

SECTION 11B.5: FIRE PROTECTION:

11B.5.1. The area of Amravati Forest Division is prone to repeated fires due to heavy biotic pressure and due to deciduous nature and the dry climate. Fire cause extensive damage to the forest specially 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 forest development. The leaf litter on the ground and highly combustible under growth of grasses etc. catch fire and spread instantly. In summer high speed of winds spread fire easily before it could be brought under control. The areas needed to be protected from fire are classified into the following categories based on purpose of fire protection.

11B.5.2. Class I : Forest completely protected. This area includes.

- i. All main felling coupes, thinning coupes, all the forest area under Protection WC, SCI WC Afforestation WC and Improvement WC and Fodder Improvement WC.
- ii. All regenerated coupes of all WC till the young crop has attained the age of 10 years.
- iii. All plantations.
- iv. All forest nurseries.
- v. All government timber depots.
- vi. Special habitat areas or any other special important areas as specified by the concerned circle in charge.
- 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 DCF in detail.

11B.5.3. Class II (General fire protection):

- i. The remaining areas of SCI WC.
- ii. All the other areas as specially directed by the CCF(T) of Amravati 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 with interior fire lines and no trees shall be cut. Fire watchers may be engaged as sanctioned by the concerned circle in charge.

11B.5.4. 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 growth and combustible material.

- i. All external boundaries of reserved forests to the extent of width of 12 meters.
- ii. 6 meter width around all the plantations up to 10<sup>th</sup> year from planting.
- iii. 3 meter wide coupe lines up to 10 years of main felling.
- iv. 6 meter wide lines on both sides all along the roads and car tracts that are passing through forests.
- v. 40 meter wide fire lines 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 controlled burning shall be completed by the end of February.
- (2) Leaf litter on the fire lines shall be collected from time to time and burn before the fire season starts.
- (3) No fire line shall be burnt after February unless there is a special order from the concerned DCF.

11B.5.5. Fire control measures :

- (1) A consolidated fire protection scheme shall be prepared as per the prescriptions of WP with the provisions of watch point, strategic location, fire watchers, deployment of vehicles and the supervisory 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 watchers shall constantly patrol the areas of class -I and class- II.
- (4) The fire watching towers shall be erected at strategic points where the fire watchers sit on towers 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 shall maintain a register of fire lines showing length and width of fire lines, the period of cutting & burning and a consolidated map shall be prepared based on the actual position of fire lines. Any negligence in fire protection duty shall be viewed as dereliction of duty. The supervisory officers must extensively tour in the area and verify the fire control measures.
- (7) The members of JFM committees and Eco-development committee shall be involved in the fire protection. The work of fire protection can be entrusted to these committees.
- (8) Awareness creation in the villages through regular meetings, posters, etc.
- (9) To prevent forest fire due to Tendu leaves collection, the tendu collection centres of the village where forest fire had occurred should be closed for a year or two as per Government directives.
- (10) The vehicles that are available will be deployed at strategic locations where the fire protection gangs can reach easily.

11B.5.6. Responsibility of officers in fire protection:

The Range Forest Officer is personally responsible for efficient fire protection in his range. If there is a common boundary between 2 ranges, the responsibility of clearing fire line will be decided by the DCF. In case of common boundary between 2 divisions, the fire line cutting and maintenance will be decided by the CCF (T), Amravati Circle. The DCF is personally responsible for carrying out efficiently all protective measures. The DCF 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 his jurisdiction extensively. During fire season and during his tour, he must keep a strict watch on fire protection by means of interaction with local people and inspections. A constant watch should be kept on Tendu contractors and their agents who engage local labourers to put fire to forests to get good flush of Tendu leaves.

#### 11B.5.7. Fire reports:

If any fire incidence takes place the concerned RFO must inform DFO/DD at once. After fire is extinguished, RFO shall submit a detailed report to Division office on extent of area damaged, value of damage with detailed map within 15 days. The Division office shall submit monthly return in prescribed proforma to the Circle office showing serial number of fire, date of occurrence, cause, area burnt, extent of damage and the steps taken to extinguish fire. A register of fire record shall be maintained at Division office giving details of length of fire line of Class I, II and III. The fire incidents that take place in class I, II, III areas shall be indicated with different marks on map. Deliberate burning of debris on silvicultural principles to encourage regeneration need not be included in fire protection scheme and fire should not spread outside the targeted area.

#### SECTION 11B.6 : GRAZING CONTROL:

Grazing causes lot of damage to regeneration due to trampling. To control grazing, grazing units are formed in the division. The number of cattle heads per unit is fixed as per the carrying capacity of the area. The incidence of grazing is high in and around the forest areas where the villages are situated and the impact of grazing, illicit felling, fire encroachment is also tremendous around the villages. Therefore the forest area around villages are deprived of regeneration. In many places especially areas around villages, the ground story is completely missing. Number of various offence cases is given in the following table.

Statement showing number of offence cases registered

Sr. No.	No. of offences registered				
	Year	Illicit felling	Grazing	Fire	Total
1	2008-2009	296	30	22	348
2	2009-2010	437	59	57	553
3	2010-2011	148	45	42	235
4	2011-2012	437	18	36	491
5	2012-2013	319	13	36	368

#### SECTION 11B.7 : ENCROACHMENT:

The problem of encroachment is common in almost all the areas specially the forest areas located adjoining human habitations. The problem of encroachment is mainly because of lack of survey and demarcation on the ground, the greed of people and apathy of local people towards government lands. Small isolated patches of forestland are often neglected and become vulnerable to encroachment. In order to mitigate the problem, it is essential to take up survey and demarcation works on top priority. Precast pillars of 1<sup>st</sup> and 2<sup>nd</sup> 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 1/5<sup>th</sup> boundary demarcation scheme. The powers vested with ACF and above rank officers under Section 53 and 54 of Land Revenue Code shall be effectively utilized. The encroachment if any can be tried summarily and evicted as early as possible. The following instructions shall be followed regarding encroachments.

- (1) Special care shall be taken to ensure protection of such patches from encroachment. The civil powers of eviction are entrusted to ACF and DCF. The procedure laid out in the Land Revenue Code shall be followed before the execution of eviction. Habitual encroachers shall be prosecuted as per Indian Forest Act.
- (2) All external boundaries shall be demarcated with concrete pillars. All sensitive and important boundaries and wherever disputes are there, be surveyed and concrete pillars be laid immediately.

- (3) All encroachments shall be listed with their names, age, residence, profession whether belongs to SC, ST, OBC/NT, extent of encroachment, s.no. and location of encroachment, village/block.
- (4) A detailed report of the case be prepared for each encroacher and submitted to ACF to obtain summary eviction orders in a time bound programme.
- (5) After the completion of due procedure of Land Revenue Code and after giving a reasonable opportunity of being heard to the encroacher, ACF shall pass a summary eviction order if he satisfies so quoting the findings.
- (6) The concerned RFO shall execute the eviction order.
- (7) If the encroachments in a village are more in number, police protection be obtained for the operation. Use of Cr. P.C. provisions like section 106 and 110 be used to smoothen the eviction operations as well as to prevent the tendency of future encroachments.
- (8) For the encroachments on the un-classed forests (though 7/12 shows clear possession of the department) FIR shall be lodged in the concerned police station for the prosecution.
- (9) Regularization of the encroachments made earlier to 1980 be settled as early as possible as per FRA act 2006.
- (10) After the listing of all encroachments, sample verification shall be carried out by all supervisory officers to detect unregistered encroachments.
- (11) In the month of May, a drive for encroachment prevention is taken up in all the sensitive areas by taking meetings in the villages by *Dawandi* and distribution of leaflets and posters.
- (12) Keep a watch on all the sites meant for debris cleaning, ploughing etc., in the month of May, so that encroachments are removed even before the sowings.

In the recent past the tendency for encroaching forest land for cultivation has increased. The actual encroached area is higher than that of recorded one. The eligible encroacher's encroachment is under enquiry by the District Magistrate Committee in relation to regulation of the Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006. The causes of forest encroachments shall be examined thoroughly and corrective measures be taken. All necessary support should be extended to evict the encroachments as early as possible. The boundary management and standard administrative guidelines will help to control the encroachment. RFO must inspect at least 50% of the boundary demarcation, ACF at least 10% of the boundary demarcation, DCF at least 2% of the boundary demarcation. RFO Mobile Squad shall check 2 % of the boundary demarcation.

#### 11B.7.1. Boundary Maintenance:

Precast reinforced cement concrete pillars have been fixed to demarcate the boundaries of forest. However, it has come to notice that in most of the places the RCC pillars were destroyed for the purpose of stealing mild steel bars by unknown persons, as every pillar constructed cannot be rendered protection in the forest for all the time. Also due to difficulties in execution of these works in remote places and keeping control on the quality & quantity the purpose of the scheme has been defeated in most of the places.

It is therefore recommended that demarcation of such areas by digging TCM around the area in a phased manner and old system of cairns be enforced strictly. It is necessary to take up the work of updating maps, updating entries in 7/12 record of rights, tallying the area by checking village maps, forests notifications, form 1 A of village Patwari/Talathi etc. shall be taken up. DCF shall take up monthly review of progress of these works. All the maps must be updated and supplied for better management. The update maps shall be provided to WPO. The damaged old loose stone cairns should be repaired and wherever necessary new cairns be made. Maintenance programme of 1/5<sup>th</sup> boundary maintenance should continue as per the old practice of cutting of demarcation line 12 m wide and erection of loose boulder cairns

SECTION 11B.8 : ROLE OF JOINT FOREST MANAGEMENT :

**JFM committee's will contribute to a large extent in protection of the forest from illicit felling, encroachment fire, grazing, etc provided if the forest staff has a constant dialogue with the JFM committees and involve them for joint patrolling, management and development of the forests. The JFM committees shall be entrusted with specific area earmarked for the protection, management and development of the area. The committee members need 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.**

SECTION 11B.9 : POACHING:

**A programme for of checking of weekly bazar be chalked out to control the sale of wild animals and during festival season like Pola, Holi, particularly tribal community resort to hunting of wild animals and appropriate measures should be taken under Wildlife Protection Act 1972.**

SECTION 11B.10 : CONTROL OF UNAUTHORISED COLLECTION OF NWFP:

**In this division a number of NWFP is available, out of these Tendu, Moha, Gums and Behada etc. are available in large quantity. To control unauthorized collection of NWFP apart from the patrolling in forests checking should be organized by RFO in some marketing places like weekly bazar and other places regularly.**



CHAPTER – XII

OTHER IMPORTANT REGULATIONS

SECTION: 12.1: DEMARCATION OF COUPE AND PREPARATION OF TREATMENT MAP.

12.1.1.1. Coupe will be demarcated as per schedule given in the respective working circle. First coupe will be demarcated and marked in the first year itself to have felling in that year. The coupe will be demarcated as per sequence given for working as mentioned under different working circles and a treatment map will be prepared by the R.F.O., which will be verified by an A.C.F. After that a coupe demarcation certificate along with the treatment map will be furnished by the concerned R.F.O. in the following format:

I, -----, R.F.O. -----  
 ----- certify that I have personally inspected the demarcation of coupe  
 No. ----- in      Compartment No. ----- of -----  
 W.S. in ----- W.C. on dated  
 ----- and have prepared the treatment map as per the  
 prescriptions of the working plan. The area of the coupe is ----- ha.

( ----- )  
 RANGE FOREST OFFICER,  
 Signature of the RFO with date.

-----  
 Counter signature of ACF with date

12.1.1.2. DEMARCATION OF COUPE:

(i) Annual coupe will be demarcated by cutting and clearing bushy undergrowth on 3 m wide line and by erecting pillars or posts in the middle of the line at suitable intervals, except where the coupe boundary runs along a big nala, a fire line or a road. Coupe number and felling series will be written on the pillars on the side away from the area of the coupe.

(ii) Selected trees at suitable intervals, standing on the periphery of the coupe, will be given two coal tar bands and a geru or red band in between. The lower coal tar band will be at B.H. and the other coal tar band will be 15 cm above it. Just below the lower coal tar band serial number in Arabic will be given on the side away from the area of the coupe. The serial numbers of such trees will be maintained in the marking register in the following format:-

Table 12.1.

Serial Number.	Species	GBH(OB) in Centimeter	Remarks
1	2	3	4

(iii) No trees bearing coupe demarcation bands will be marked for felling.

12.1.1.3. DEMARCATION OF SECTIONS:

- (i) To control harvesting, each coupe marked for felling will normally be divided into four approximately equal sections. Sections will be demarcated by 1.5 m wide cut lines by clearing brushwood unless the section line runs along a permanent feature, e.g. Nala.
- (ii) Trees above 45 cm girth, selected at suitable intervals on the inner edge of the 1.5 m wide cleared section line will be given two coal tar bands 15 cm apart, the lower coal tar band being at breast height. Just below the lower coal tar band section number will be given on the side away from the area they would denote.

12.1.1.4. DEMARCATION OF PROTECTION AREAS: Selected trees, on the periphery of the protection areas will be given two geru bands 15 cm apart, lower band being at b.h. In addition, a cross in geru color between the bands will also be given on the side away from the protection areas. All those trees will be serially numbered. The serial number will be given just below the lower geru band, on the side bearing the cross. All the protection areas will be numbered in Roman numerals and the trees standing on the periphery of each protection area will be numbered in Arabic, adopting separate series for each area, so that the trees on the periphery of protection area No.1 will bear the Sr.No. I/1 and the similar trees on the priority of protection area No. II will bear the No.II/1 etc. The serially numbered trees will be recorded in the following format:-

Table 12.2.

Serial Number.	Species	GBH(OB) in Centimeter	Remarks
1	2	3	4

12.1.1.5. DEMARCATION OF OTHER AREAS GIVEN IN THE TREATMENT MAP: The other categories of areas will be demarcated by giving one geru band and one coal tar band. The geru band will be at b.h. and the coal tar band above this and at a height of 5 cm above this.

12.1.1.6. METHOD/TECHNIQUE OF MARKING OF TREES:

- (i) All trees to be marked for felling will be given a geru band at b.h. after removing the bark and will bear marking hammer marks at both b.h. and base on a clear blaze of size - (10 cm x 10 cm).
- (ii) Following trees marked for felling in addition will bear digit serial nos. at both b.h. and base (a) All trees of Teak, Bija, Shisham, Ain, Tiwas, Haldu, Karam, Dhaora and Shiwan of 45 cm and over in girth at b.h.(o.b.). (b) Trees of all other species of and above 60 cm girth at b.h.
- (iii) All remaining trees marked will bear serial number, which will be given by coal tar. The digit and coal tar serial numbers will form separate series. Malformed trees alone will be recorded as fuel trees except that of teak. A tree will be classified as fuel tree only when it is incapable of yielding any useful sawn timber or pole.
- iv) All trees bearing serial number will be individually recorded in marking (recording) book giving following details:

Table 12.3.

Serial Number		Species	GBH(OB) in centimeter	Remarks
Digit	Coal tar			
1	2	3	4	5

- (v) Abstract of trees marked for felling will be made in 15 cm girth classes. Timber, poles and firewood trees will be shown separately.
- (vi) The number on the trees will be put in the vertical direction as shown below:

Tree No. 786 →  $\begin{matrix} 7 \\ 8 \\ 6 \end{matrix}$

\*\* If a tree is capable of yielding 30% of the timber expected from it as per the form factor, it is classed as 'Timber tree', 10% to below 30% as "carpentry tree" and below 10% as "Fire wood tree."

SECTION: 12. 2: HARVESTING AND DISPOSAL OF FOREST PRODUCE:

12.2.1.1. Timber and firewood: **All coupes of main felling will either be worked through Forest Labours Co-operative Societies or departmentally or allotted to JFMCs. All timber and firewood will be extracted to the established Government depots for sale by auction. The quantity of timber, poles and firewood to be given on Nistar at concessional rates will be kept separately in these depots.**

12.2.1.2. Tendu Leaves: **With the enactment of "Maharashtra Forest Produce (Regulation of Trade) Act, 1969" the trade in tendu leaves has been nationalized. The disposal of this produce will be done in accordance with the provisions of this Act. In all 4 tendu units have been formed which have been grouped into 4 working units. Tendu leaves are auctioned by Additional Principal Chief Conservator of Forest, Evaluation and Nationalization M.S. Nagpur.**

12.2.1.3. Grass: **Disposal of grass from closed coupes will be done as per instructions contained in Govt. Resolution No. MFP 1169/118931 - (6) - F-2, dated 29-10-1976 i.e. grass from closed coupes will annually be offered on cutting terms to JFMCs or the gram panchayats or public bodies or F.L.C.S. in the neighbouring area at a reasonable price to be fixed by the department, considering the availability of grass and current market trend. With the directions in the latest Govt. Resolutions dated 25/4/2003 and 5/10/2011 on grass and fodder that JFMCs will have first charge. Accordingly JFMCs will be allowed to collect or auction. If the concerned JFMCs or Gram panchayat or the other public bodies are not coming forward to take those areas, then grass may be disposed off either by public auction or may be allowed to be removed free of cost without damaging the forest.**

**As per central government new policy in tribal areas tribals will have proprietary right over collection and disposal of MFP in forests. Similarly in PESA areas this right will vest in Gram Panchayat. It has become obligatory on the part of Forest Department to have its hold on protection of MFP bearing trees and their health and allow the Gram Panchayats to use them for prosperity of tribal people in case of all minor forest produces.**

12.2.1.4. Gum: **Collection of natural gum may be carried out through JFMC. If JFMC is not able to do the work then it is to be sold by public auction. Making injuries to trees to collect gum is not permitted.**

12.2.1.5. General: **Sound and young growth of all important species yielding minor forest produce such as Moha, Charoli, Aonla, Tendu fruits etc. will be retained in areas earmarked for harvesting in such a manner that they are suitably dispersed and would also serve as a subsidiary crop to main species and would constitute a source of availability of minor forest produce to the tribals and local people. In the light of the Central Government recent provisions of the Panchayats (Extension to the Scheduled Area) Act, 1996 section 4(m), while endowing Panchayats in the Scheduled Areas with such powers and authority as may be necessary to enable them to function as institutions of self-government, a State Legislature shall ensure that the Panchayats at the appropriate level and the Gram Sabha are endowed specially with--- (ii) the ownership of minor forest produce. Thus proprietary right over MFP will vest in Gram Panchayat in Schedule Areas. The Forest Department will monitor the collection of MFP in Schedule Areas and ensure the hygiene of the Forests as per the scientific and silvicultural requirements of the M F P producing trees.**

SECTION: 12.3: IRREGULAR HARVESTING:

12.3.1.1. **Irregular harvesting of timber, firewood and other minor forest produce is prohibited except in the following cases -**

12.3.1.2. **Removal of dead, fallen firewood on rated passes is permitted from all parts of the forest except in the coupes due for working. Every year in the month of October, each beat guard will report the availability of the dead fallen firewood compartment wise to the concerned R.F.O.**

The Deputy Conservator of Forests in charge of the division will compile this information and fix the quantum of the dead fallen firewood to be removed from each range by mid - November. Each R.F.O. under the guidance of the concerned A.C.F., will distribute the targets of the available material amongst various JFMCs as per their demand and availability along with the location of the area from where it could be collected. The list of the persons so prepared by each JFMCs will be handed over to the concerned R.F.O. latest by 15<sup>th</sup> December. Based on this list, the rated passes will be issued to the concerned persons by the R.F.O. No felling of trees will be permitted to obtain firewood. The Deputy Conservator of Forests in charge of the division may however stop extraction of firewood on rated passes from a specified area, in case, he is satisfied that no firewood exists in that area for such removal.

12.3.1.3. Felling of trees on fire- lines if necessary may be carried out by the Deputy Conservator of Forests in charge of the division without reference to the Conservator of Forests. The felling of trees under electric and telephone lines may be carried out by the Deputy Conservator of Forests in charge of the division.

12.3.1.4. Felling of trees on forest land required by other departments such as irrigation, B & C etc. should only be undertaken after the proposals for the use of forest land for non-forest purposes are approved by the GOI under the provisions of Forest (conservation)Act, 1980 .The cost of harvesting of trees is to be provided by the concerned agency.

12.3.1.5. Forest produce required for departmental works and free grants may be removed on the orders of the Deputy Conservator of Forests in charge of the division under the provisions contained in art. 256 of BFM Vol. I and art. 147 of BFM Vol. III respectively upto the limits of his power. The felling under these provisions, however, must be on silvicultural lines and as far as possible will be confined to the coupe of the year or to the coupe to be worked next. Felling of fruit trees will be excluded and felling in a radius of 40 mtr. from the perennial water-holes, Nalas and springs will be prohibited.

12.3.1.6. Essential felling for research related purposes may be carried out with the permission of Deputy Conservator of Forests; Territorial such felling should also be reported to Working Plan Officer.

#### SECTION: 12.4.1: SURVEY AND DEMARCATION:

12.4.1.1. As far as "A" class Babul ban and "C" Class Reserved Forests are concerned, they are scattered in hundreds of small patches. They are neither properly demarcated on the ground nor on the maps. These areas have received second grade treatment in the past... These areas have not been properly surveyed and accordingly their boundaries are not maintained properly. Some of the areas have been handed over to other departments prior to 1980, but without demarcation on the ground or on the maps. Even after so many years they have not been disforested legally. Non forests taken over by the division and areas to be taken over by the division are not surveyed and properly demarcated. Hence total areas of division will be surveyed in first five years of plan operation. In the next five years 1/5th boundaries maintenance works will be carried out as per the schedule given in Appendix No.LI in Volume II of this Plan. The outer boundaries will have Pre Cast Reinforced Cement Concrete Pillars of specification as stipulated by PCCF MS. The boundary of few patches which are sensitive to encroachment, valuable lands and strategic locations will be either chain link fenced or with wall compound. The schedule of works has been enlisted in the Appendix No.LI in Volume II. The objectives of survey and demarcation are to: (1) To know and maintain the exact boundaries on the ground as well as on the map. (2) To remove encroachments if any.

12.4.1.2.: COMPARTMENTS: Range wise details of the compartments to be surveyed and demarcated have been given in Appendix No.LI in Volume II.

12.4. 1.3: TIME BOUND PROGRAMME: **The work of survey and demarcation shall be completed within five years. Year wise program have been given in Appendix No. LI in Volume II of this plan. In the next five years of operation of plan maintenance of boundaries will be carried out as 1/5<sup>th</sup> boundaries maintenance.**

12.4.1.4: METHOD OF EXECUTING THE WORK. **The village maps and land records shall be obtained. They shall be compared with the maps and record available with the forest department. Discrepancies shall be identified and shall be removed with the help of D.I.L.R. and final map of the area shall be prepared and the area shall be demarcated on the ground. The method for demarcation shall be as per the direction given by Office of Principal Chief Conservator of Forests, Maharashtra State vide his Letter No 68 dated 29.5.2001( Marathi) and appended as Appendix No LXVI of Volume II of this plan.**

12.4.1.5: EXPECTED EXPENDITURE. **The expected expenditure for the erection of RCC Pre-Cast pillars will be as per the proposed expenditure for Class I and Class II pillars for which model expenditure have been provided by the office of the PCCF MS. The details of model wise estimate of expenditure and specification of RCC Pillars with their diagrams have been given Appendix No.LXVI in Volume II of this Working Plan.**

SECTION: 12.5.1.1: MAINTENANCE OF BOUNDARIES:

12.5.1.2. **With reference to legal status, the forest areas within the tract dealt which can be classified as Reserved Forests, Protected forests, and Un classed Forests. The maintenance of boundaries of these three classes is described as follows:**

12.5.1.3. RESERVED FORESTS: **Reserved forests boundaries are being maintained by traditional boundary pillars known as cairn class I and cairn class II. Due to increasing population, the biotic pressure on forests has been increasing and it has crossed the threshold. This has resulted in the encroachment mentality of the people. So far the number of cases of encroachments in R.F. of the tract is almost nil as per the record but pressure is tremendous. The external boundary pillars may be of R.C.C. pillars of standard shape and size approved by the Principal Chief Conservator of Forests, Maharashtra or it should be maintained as below:-**

**The width of the cleared areas of outer boundaries of Government forest should usually be 40 feet but this may be increased by Chief Conservator's orders in special cases. Except where natural features form the boundary, demarcation will be by pillars, the form of which will vary with circumstances. As a general rule, pillars shall consists of a central stake of Khair heart wood or Teak projecting six feet above ground level and should be surrounded by a cairn of stones four feet high and six feet in diameter. Where large slab stones are available on the spot the central stake may be replaced by a slab stone projecting one foot from the centre of the cairn. Where the construction of a pillar of stones necessitates heavy cost in the transport of stones, the cairns should be constructed of mud with a revetment of *tatta*. Pillars should be erected at each point where the boundary line changes direction, and where there is no change of direction at intervals not greater than 250 yards so that each pillar is clearly visible from the next on either side. Each pillar will bear a serial number a fresh series being given for each adjoining village. The number will be painted with coal tar on the face of the post or slab stone away from the government forests, they may be cut or embossed with steel dies into the wood at the discretion of the Divisional Forest Officer.**

12.5.1.4. PROTECTED FOREST: **These areas are not demarcated by any type of boundary pillars. These are normally around the villages and therefore very vulnerable to encroachment. Therefore, survey and demarcation of the P.F. areas should be done on priority bases. R.C.C. pillars of standard shape and size approved by the Principal Chief Conservator of Forests, Maharashtra should be used as boundary pillars. This work should be started from the first year of the implementation of this plan.**

12.5.1.5. UNCLASSIFIED FORESTS: New areas are being taken over from Revenue Department as land bank against compensatory afforestation. These were not demarcated. Its survey and demarcation should be done forthwith before taking any other action. The proposal for declaration as Reserved or Protected Forests should be mooted. So long as it is not declared either R.F. or Protected Forests, it should be demarcated by R.C.C. Pillars of convenient shape and size to avoid chance of encroachment. After notification of the same under section 20 or 29 of IFA, 1927, the same should be demarcated by R.C.C. pillars of standard shape and size approved by the Principal Chief Conservator of Forests, Maharashtra for reserved/protected forests.

12.5.1.6. The shape, size and estimate in terms of man days of the R.C.C. boundary pillars for both R.F. and P.F. have been approved by the Hon'ble PCCF. Details of RCC boundary pillars and estimate will be given Appendix No. LXVI of Volume II of this plan.

12.5.1.7. The internal boundary marks/pillars/cairns will be traditional and maintained as per the 1/5 th boundary demarcation and verification scheme, which is given in Appendix No. LI Where natural features form the boundary, demarcation need not be done either by R.C.C. or traditional boundary pillars.

12.5.1.8. BOUNDARY LINES: The width of the cleared line of outer boundary of the forest will be 13 meters (40 feet). Nothing will be cut growing outside the true forest boundary line. The clearing will consist of cutting down only all the undergrowth that impedes the view, preventing one forest boundary mark being seen from its neighboring one. Trees on the boundary lines will not be cut down so long as they do not obscure the view of the boundary marks one from the other.

12.5.1.9. As the survey of areas and erection of permanent boundaries pillars have been provided on priority basis, it needs accurate mapping of the forest areas and the position of the pillars on the maps. Hence it is necessary that the Deputy Conservator of Forests Amravati Forest Division should attend to this work without loss of time and get the accurate maps prepared. One trace map showing the boundary pillar numbers should be given to Conservator of Forests, Working Plan Division Amravati showing these pillar number on the master set maintained in his office.

12.5.1.10. The external and internal boundaries of the forest will be maintained according to 1/5th boundary demarcation and verification scheme. The boundaries of the forests will be maintained as per the guidance given by PCCF, MS, in his letter appended as Appendix No. LXVI in vol. II of this plan.

12.5.9. BOUNDARY MARKS / PILLARS SPECIFICATION:

12.5.9.1. The specifications of RCC pillars boundary marks/pillars and the method for demarcation shall be as per the direction given by Office of Principal Chief Conservator of Forests, Maharashtra State vide his Letter No 68 dated 29.5.2001 (Marathi) and appended as Appendix No. LXVI in Volume II of this plan. The specifications of pillars as directed by PCCF (HoFF) Maharashtra State from time to time may be implemented. Even old prescription of cairns can also be continued.

12.5.9.2. SHAPE: As stipulated by the order of PCCF.

12.5.9.3. DESCRIPTION: As prescribed by competent authority.

12.5.9.4. FOUNDATION: It will be as per the sanctioned dimension.

12.5.9.5. DIMENSIONS: It will be as per the sanctioned plan.

12.5.9.6. INDICATOR: As per the directional requirement given by the competent authority.

12.5.9.7. COLOUR WASH: The pillars will be color washed red in case of closed forest and white in case of open forest and lines of the same color will be applied on the top of the cairns radiating from the center to show the direction of the boundary lines.

12.5.9.8. POSITION: The boundary marks pillars will be placed at visible distance one from the other, so that from any mark it's neighbouring one on both sides can be seen clearly. Where there is no change in direction over a large distance, the boundary marks will be erected at intervals not greater than 250 meters and distance would be maintained as per the direction from competent authority.

Demarcation will be done by erecting Pre Cast RCC pillars of 1<sup>st</sup> Class at an interval of 50 meters along the sensitive areas adjoining to private holdings. Along the boundaries, which are not so sensitive 1<sup>st</sup> Class pillars will be at an interval of 100 to 150 meters, apart and 2<sup>nd</sup> class pillars at an interval of 30 to 40 meters will be erected. The Pre Cast RCC Pillars will be of the specifications given by PCCF MS as appended in Appendix No.LXVI in Volume II of this plan.

Each pillar will bear a serial number; a separate number will be given for each adjoining village. In addition to the boundary marks, tin plates will be fixed on the boundary trees at a height of 3 m above ground, preferably at the boundary of two compartments. These plates will indicate the compartment numbers with arrows and below them will be pillar numbers on either side of the plates. The metal plates will be size of 45 cm x 45 cm. They will be painted white and compartment number and boundary pillar number will be written in red.

12.5.9.9. While carrying out annual maintenance, the following points need special attention

- (i) That the pillars are correctly located as per map and demarcation register,
- (ii) That the forest boundary is cut to the required width,
- (iii) That the repair to the cairn is done.
- (iv) That the boundary post bear the correct number and the same is engraved and written coal tar or paint,
- (v) That there are no encroachments.

If there are any encroachments suspected, the matter should be pursued and all legal measures should be taken to remove the encroachments.

12.5.9.10. Rules for inspection and maintenance of forest boundary marks:

(i) The Beat Officer of the beat will be responsible for the maintenance and protection of all the boundary marks in the forests of his beat. He himself will color wash them annually after rains and will make a special report of having performed this work. Each forest boundary mark in his beat will be specially inspected by him at least once every year, and a record of his inspection will be entered in his diary.

(ii) The Round Officer will be responsible for the maintenance and protection of all the boundary marks in the forests of his round and he will see that they are maintained properly, repaired and color washed by the concerned beat guard, as directed. The Round Officer will check all the boundary marks in a year, which come up for maintenance and repair as per the 1/5<sup>th</sup> boundary demarcation scheme. A mention of this will be made by him in his diary. The Round Officer will annually submit to the Range Forest Officer a certificate in the following format:

"I, Certify that the annual length of boundary lines in my jurisdiction as prescribed under the scheme given in Appendix No.LI of the working plan for the Amravati Forest Division has been verified by myself personally on ----..... and that boundary lines and marks and pillars are found to be correct as per the demarcation registers and maps. I, further certify that next cairns on either side of a cairn are visible and they are in proper condition and bear correct serial number. There are no encroachments or are encroachments as detailed below:

(iii)The Range Forest Officer will check at least 25% of the annual boundary line as per the 5 year program and 10% verification will be carried out by the ACF and 5% verification by DCF for every year.

12.5.10. MAINTENANCE OF COMPARTMENT BOUNDARIES:

12.5.10.1. **The compartment boundaries will be cleared to a width of 3 meters, except where the same runs along big nala or road. Rectangular tin plates of size 30 cm x 30 cm will be fixed with nails on the trees at 3 meter height standing on the boundary of the compartment at regular intervals of 250 meters and also at all the corners. After painting the tin plates white, the compartment numbers will be written on them with red paint.**

12.5.10.2. **Legal provisions available for protection of the boundary marks. Under section 63(c) of the IFA, 1927 altering, moving, destroying or defacing any boundary marks of any forests to which the provisions of this Act apply, is punishable with imprisonment for a term which may extend to two years, or with fine, or with both. This offence is non-compoundable under section 68 of the above Act. All field staff should be made aware of this provision.**

**Strict watch shall be kept and any person doing so should be booked under the above provisions contained in IFA, 1927.**

12.5.11 BOUNDARIES AND BOUNDARY MARKS (Outer Forest Boundary)  
(Details as given in Maharashtra Forest Manual)

12.5.11.1 Boundaries and Boundary Marks

(i) Demarcation of boundaries :-

**Perfect symmetry of forest outlines and mathematical accuracy of boundary are theoretically desirable, and may be aimed at as far as is practicable, but to secure these objects it is not desirable to sacrifice any material area of forest, to exclude from reserve, plots of land of considerable size which have been included in them for years and are covered with trees and vegetation and to take from cultivation any comparatively large quantity of land on which rice or garden crops are now grown. Save when the boundary line is very irregular, and valid reasons exist rendering its rectification expedient, the conversion of pieces of land now cultivated into reserved forests, and vice versa, should not be carried out merely in order to obtain a perfectly symmetrical boundary; what are required are well defined limits, a tolerably regular boundary, and the concentration, as far as may be, of cultivation and forest respectively in considerable areas. (BFM II, 120)**

(ii) Economy to be practiced in erecting boundary marks :-

**Care should be taken to practice economy in the erection of the longer description of boundary-marks in forest. There is no necessity for their being so near together as at intervals of a hundred feet. It will be advisable that the one on each side of it should be visible from each of these. With this exception, all intermediate bends may be denoted by smaller marks. (BFM II, 121)**

(iii) Rules relating to forest boundary marks and their upkeep :-

- a) **A special forest boundary mark is to be built at every survey mark.**
- b) **If the survey boundary marks are so far apart that the special forest boundary mark at them cannot be seen owing to the distance, or the physical configuration of the ground, then intermediate special forest boundary marks must be erected between the two points so as to make the line clearly visible.**
- c) **To avoid erecting more special forest boundary- marks than are absolutely necessary, and also to define the true line of boundary clearly, all bushes and undergrowth between two boundary marks should first be removed.**
- d) **This clearing should consist of cutting down only all the undergrowth that impedes the view, preventing one forest boundary-mark being seen from its neighbouring one, or when crossing the boundary line at any point, two boundary marks, one on the right hand and the other on the left, should be visible.**

- e) **The breadth in the clearance should, in no case, exceed six feet or two paces, unless the line constitutes a fire line or the special conditions indicate the need of clearance up to a maximum limit of 12 feet.**
- f) **Nothing is to be cut growing outside of the true forest boundary-line.**
- g) **Trees on the boundary should not be cut down so long as they do not obscure the view of the boundary marks one from the other, unless for clearing a fire line.**
- h) **Whether there is but little to cut, the beat guard can clear the boundary-line with his own hand if his other duties permit; if not, the work should be done with as little cost to Government as possible under the special sanction of the Dy.C.F. /D.F.O. in each case and subject to provision being available in the sanctioned budget in the year.**
- i) **But where the undergrowth is heavy the work may be undertaken at Government cost, funds being provided for it in the budget.**
- j) **The beat guard must, after the boundary has once been cleared, keep down all regrowth. (BFM II, 122)**

(iv) Specification of forest boundary marks :-

**The Chief Conservator of Forests should prescribe the type of forest boundary marks which they consider suitable in a particular locality or country. The following general instructions are however issued for guidance:-**

(a) **In hilly country and also in the plains where stones are to be found in considerable quantity there shall be two classes of forest boundary-marks of the following specification:**

Shape: - **A truncated cone.**

Description: - **Built of loose stones upon an excavated foundation so that the lowest tier of stones shall be held in position and not pushed out by the weight of the superstructure, especially when the ground becomes wet and slippery. The interstices between the large stone composing the cairn are to be filled in with small stones and the outer stones are to be wedged with stone chips. A shaped stone showing a height of a least 15 inches is to be fixed firmly on the top of the cairn in the centre.**

Foundation: - **15 cm. to be dug out.**

Dimensions: - **First class mark to have a base of 2.1 m. diameter, to be 1.5 m high and the top to be 1.2 m diameter.**

**Second class mark to be on the base of 1.2 m diameter, to be 1 m high and to be 0.75 m in diameter on top.**

Indicator: - **A cut stone showing at least 40 cm. clear of the cairn to be embedded firmly in the centre on top, the stone to be large enough for a serial number to be cut on it if required.**

Color-wash: - **The stone to be color washed annually red in the case of closed forests and white in the case of open forests and lines of the same color are to appear on the top of the cairns radiating from the centre stone to show the direction of the boundary lines.**

Position :- **A first class boundary-mark to occupy main points and angles, such as where the boundary of a forest block, forest compartment or village may intersect the forest boundary, and where the latter may take an abrupt turn.**

**A second class boundary mark to occupy intermediate points.**

N.B.:-

1) The boundary marks are to be placed at visible distance one from the other, so that from any mark its neighbouring one on both sides can be seen clearly.

2) Where loose stones are not plentiful, instead of smaller cairns to occupy intermediate stations, the first class marks can be connected by a row of stones, showing 30 cm above ground placed in a single line, one guntha chain or 20 m apart which are to be coloured red or white as the case may be.

(b) In the plains where loose stones are not plentiful, the forest boundary mark may consist of truncated cone made of earth well rammed, or of sun dried bricks, or it may consist of the ordinary survey band or boundary-mark with a stone stuck on the top which will be coloured red or white as the case may be and the bands upon the forest boundary will be connected by stones showing 1 foot above ground to be color-washed red or white as the case may be. (BFM II, 123)

(v) Rules for the inspection and maintenance of forest boundary marks :-

(a) The Beat Officer of the beat will be responsible for the maintenance and protection of all the boundary-marks in the forests of his beat, he will color wash them annually after the Diwali holidays and will make a special report of having performed this work; he will repair with his own hands and marks that may become disarranged.

Each forest boundary-mark in his "beat" is to be specially inspected by the beat guard at least once every year, and a record of his inspection is to be entered in his diary.

(b) The Round officer will be responsible for the maintenance and protection of the boundary-marks in the forests of his round and he will see that they are maintained in proper repair, and color washed by the beat guard, as directed.

The Dy.C.F. /D.F.O. will divide the boundaries of the forest of each round into five specified sections by villages and allot each section to a specified year in regular rotation for detailed inspection by the Round officer. The Round officer will specially inspect every forest boundary mark in the allotted section and record every inspection made in his diary. He will also submit a special report to the Dy.C.F. /D.F.O. through the R.F.O. upon the state and condition of the boundary marks, forest boundaries, etc., as soon as he has completed the inspection of the boundaries of the section allotted to the year.

(c) The R.F.O. will, during the official year, inspect and specially report on the state and condition of the forest boundaries and forest boundary marks of not less than two miles of forest boundary in every "beat" in his range.

A record of inspections made will be entered in his diary when they may occur. (BFM II, 124)

(vi) Boundary marks of interior survey need not be kept up, those outside should be annually repaired :-

The boundary-marks of interior survey numbers of a forest block may be allowed to fall into disrepair, the boundary-marks on the outer boundary of the outer survey numbers on the forest reserve boundaries being annually inspected and repaired. (BFM II, 125)

(vii) Prickly-pear fencing-

Prickly-pear should not be used for fencing. (BFM II, 126)

(viii) Areas which should be wire-fenced :-

**Wire-fencing should be restricted to such works as valuable operation, nurseries, protective reboisement works, depot compounds, etc. Any large expenditure upon wire-fencing of forest should be justifiable in the interest of forest conservancy. (BFM II, 127)**

**12.5.11. OTHER REGULATIONS: Area register shall be updated every year according to the changes brought about during detailed survey and demarcation of the areas as described above. Territorial Deputy Conservator of Forests shall supply the copy of the corrected maps and area register to the Conservator of Forests Working Plans every year in the month of June.**

**SECTION: 12.6: FIRE PROTECTION:**

**12.6.1.1. Uncontrolled fires cause immense harm to the forest in the form of damages to flora and fauna, young crop, regeneration and the soil - fertility. Fire incidence is noticed in the forests of the Amravati division also. For effective protection of the forest, various forest areas are classified as follows.**

**12.6.1.2. Class I: Forests completely protected: It includes the following.**

**i) All Plantations.**

**ii) All regenerated coupes of all the Working Circle till the young crop has attained an age of 10 years.**

**iii) All government timber depots.**

**iv) Any other areas of special importance as ordered by the Chief Conservator of Forests (Territorial). All the above specified areas will be fire protected by isolating these areas by means of fire-lines and cut guidelines and will be patrolled by the fire-watchers. Any fire in these areas must be reported to the Deputy Conservator of Forests in writing giving the details of the area burnt and various types of losses.**

**12.6.1.3. Class II: Forests generally protected: This class includes:**

**i) The remaining areas of 'Improvement Working Circle' 'Kuran Working Circle.'**

**ii) Any other areas of special importance as ordered by the Chief Conservator of Forests (Territorial). All these areas will be isolated by means of external fire lines and will be divided into convenient blocks of interior fire lines. No guidelines will be cut. Fire watchers may be engaged for patrolling if sanctioned by the Chief Conservator of Forests (Territorial)...**

**12.6.1.4. Class III: Forests protected by law only:**

**(a) All other forests not included in the above two classes are included in this class. Deliberate burning in these forests is prohibited by law, but no special measures for protection will be undertaken.**

**(b) The following lines will be maintained as fire-lines and will be kept clear of all growth and combustible material during the fire season i.e. from February till May.**

**i) All external reserved forest boundary lines upto 12 meters width.**

**ii) 6 meter wide lines around all plantations upto 10 years from the year of planting.**

**iii) 6 meter wide lines on both sides of all roads and cart tracks passing through the forests.**

**iv) 40 meter wide line on all sides of the timber and fire wood depots.**

**(c) The following rules will be followed to reduce the incidence of forest fires:**

**i) The cutting and cleaning of fire-lines will be completed by the end of December and burning should be completed before the end of February.**

**ii) Dry leaves on fire-lines will be burnt after the end of February except with the express order of the Deputy Conservator of Forest. In case, such a permission is granted, the burning should be done in the presence of the R.F.O.**

(d) The fire watchers will prevent the carrying and kindling of any kind of fires in the forest and will keep the fire-line completely free of all kind of combustible material. On noticing a forest fire, he should at once inform the beat guard and will assist him in extinguishing the same with the help of the local people. The R.F.O. must inform about the outbreak of fire in his range to the DCF at once. After the fire is extinguished the RFO should submit a final report along with a sketch to the Deputy Conservator of Forests within 15 days after thorough inspection of the burnt area. The Deputy Conservator of Forests will submit a monthly return to the C.C.F. mainly covering the cause of the fire, the area and the extent of the damage and measures taken to extinguish the fire. A separate fire-record must be maintained in the division office. Areas deliberately burnt for silvicultural reasons e.g.; to destroy felling debris or to stimulate regeneration etc. will be excluded from the scheme of fire protection provided it is prescribed in the Working Plan or sanctioned by the C.C.F. the steps to cut-back the badly damaged young regeneration in the naturally and artificially regenerated areas due to fires, will be undertaken by the R.F.O. in consultation with Deputy Conservator of Forests. Statement of Fire lines is given in Appendix No.XLIX of Volume II of this plan.

SECTION: 12. 7: GRAZING CONTROL:

12.7.1.1. A functional classification of the forest is given in section 2 of Chapter I, Part II as enunciated in the grazing policy formulated by the Government of Maharashtra vide its resolution No. MFP - 1365/13221 - Y, dated 6-12-1968 and the grazing rules as framed by the Govt. of Maharashtra vide its resolution No. MFP/1371/237035- Z, date 3.11.1973. The grazing will be controlled as per the prescribed grazing incidence for each class of forests. Keeping in view, the above provision, the grazing in the various working circle of this plan will be regulated as under.

12.7.1.2. Improvement Working Circle: As per functional classification, this working circle comprise of tree forests and the maximum grazing incidence prescribed for it is 1.2 ha. per cattle unit. All main felling coupes will remain closed to grazing for a period of 10 years from the year of planting. In addition to this some of the compartments which bear good N.R. shall be permanently closed to grazing.

12.7.1.3. Afforestation Working Circle: The forest of this working circle can mainly be classified as 'Minor forests' and pasture lands. The grazing incidence for these lands should not be more than one cattle unit per 0.8 ha. The main coupes will remain close for a period of 10 years from the year of planting.

12.7.1.4. Kuran Working Circle: Grazing shall be completely banned in ramnas. However cutting of grasses shall be allowed only after seeding. In other areas grazing shall be allowed to the extent of one cattle unit per 0.4 ha. However main coupes shall remain closed to grazing for consecutive 3 years. During this period cutting of the grasses shall be allowed after seeding.

SECTION: 12. 8: DEVIATIONS:

12.8.1.1. As per recent Working Plan Code - 2014, details about deviation from Working Plan is as follows -

Any large and unusual operation, variation from yield and target for plantation/ regeneration and or other activities provided in control forms of the working plan constitutes a deviation.

These also should be spelt out. The check is through control forms and reporting is through deviation statements. Deviation beyond 20% of target is considered to constitute a major deviation. Following is the format of Deviation Statement.

Table 12.4.  
Statement showing deviations from working plan prescriptions

Year.....

Division.....

Serial No. of deviation	Control book name, form no. page	Reference to working plan		Nature of deviation requiring sanction
		Paragraph	Nature of prescription	

The DFO territorial will forward through the Head, territorial circle, typed copies 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. All minor deviations, which do not permanently alter the basis of management, may be approved and sanctioned by the Head, Working Plan Organization on behalf of the PCCF (HoFF) provided he agrees with the necessity of these deviations. One copy of the statement will be returned to the DFO territorial through the Head, territorial circle after the deviations have been sanctioned by the Head, Working Plan Organisation and the other copy will be sent to WPO for record. All major deviations without altering the basis of management, the prior sanction of the PCCF (HoFF) should have been obtained in advance; the sanction number and date should be quoted in the last column.

For all major deviations with respect to prescriptions where sanction of the MoEF is mandatory, an explanatory note along with request for regularization has to be sent by PCCF (HoFF) to RAPCCF (MoEF). In case where there is difference of opinion between the PCCF (HoFF) and RAPCCF (MoEF), the former will refer the matter to DGF&SS (MoEF), whose decision shall be final. The PCCF (HoFF) will countersign the deviation statement for reporting to the MoEF.

SECTION: 12.9: SOIL AND MOISTURE CONSERVATION:

12.9.1.1. Heavy grazing and recurrent fires during the dry season has resulted into the compaction of soil in the forest and as a result there is heavy runoff and little percolation of water. The forest floor lies bare with little or no humus resulting into little sub soil moisture. Due to all the above factors, the NR of teak and its associates die back before getting established. Hence soil and moisture conservation works are of utmost importance for ensuring the success of the various silvicultural prescriptions. Main operations namely contour trenching and Nala Bunding/check dams are detailed below:

12.9.1.2. Nala bunding /Check dams: The main objective of nala bunds or check dams is to reduce the run-off water to arrest the silt. Nala-bunding will start from the top of nala downward. They will be made from the loose boulders found in or around the nala bed. No digging or blasting will be done. Where sufficient boulders are not available, brushwood may also be used. Nala bunding will be done on nala upto 8 mtrs. bed width only, beyond which these structures may not be useful and permanent engineering structures, will be required. The design of Nala bunds or loose boulder structures will be as per the design sanctioned by the competent authority. The distance between the successive bunds will be such that, top of the lower bund shall be in line with the base of the upper bund. In general, the distance between successive bunds for different slopes will be the same as that for contour trenches.

12.9.1.3. Vantalis: To provide water to wildlife during the pinch period small water bodies in the form of Vantalis will be dug at suitable site and the structure design duly sanctioned by the competent authority.

SECTION: 12.10: WATERSHED MANAGEMENT:

12.10.1.1. **Proper management of Watershed leads towards sustainability of resource utilization. Land is the major resource in Rural Indian Economy. Forest Land forms mostly the upper ridges of the topography. So the management of watershed cannot be effected in isolation by the Agriculture Department or Water Conservation Department. Integrated and coordinated watershed development project implementation has become the need of time.**

Hence our planning too needs to be consistent with the overall approach of watershed management. Attempt has, therefore, been made to sequence the coupes from ridge to valley and micro watershed boundaries have been shown as additional layers using the G.I.S. techniques to facilitate effective co-ordination and communication with other related departments.

SECTION: 12.11: MISCELLANEOUS AREAS.

12.11.1.1. **The areas, to the extent of 1622.346 ha have been included in this category. Most of the areas have already been handed over to the other departments prior to 1980. But they have not yet been legally disforested by issuing the notification. Other areas are being utilized for various purposes like nurseries, sale depots, forests parks, quarters, inspection huts etc. Thus though these areas are forest lands they cannot be managed under any silvicultural system. Hence no treatment is prescribed for these areas. However survey demarcation and mapping works shall be carried out as per the program given under Survey and Demarcation section of other important regulations. The list of the compts etc. has been given in Appendix No. LXV in Volume II of this plan.**

SECTION: 12.12: FORESTRY EXTENSION:

12.12.1.1. **The growing biotic interference has resulted into heavy degradation of Amravati forest. Unregulated grazing, illicit cutting and heavy lopping of trees for fuel/fodder are few of the bad trends which could be curbed if people are made aware of the harm, they are perhaps unknowingly inflicting on the forests and in turn to themselves. For this forestry extension work, the territorial Deputy Conservator of Forests will chalk-out a detailed program for holding the 'Awareness Camps' at regular intervals in different villages with the active participation from the voluntary agencies and gram panchayats. The Deputy Conservator of Forests will try to participate in most of these 'Awareness Camps' himself. All forest officers will freely interact with the villagers highlighting the following points.**

- i) **Various services and products imparted by Forests to mankind.**
- ii) **Ill effect of dwindling forest cover and its probable impacts on future generations.**
- iii) **To propagate about the use of alternate and non-conventional energy resources. Such as solar energy, LPG, fuel efficient chullah like Vanjyoti, solar cookers etc.**
- iv) **To develop fodder resources and to encourage use of milch cattle and do away with unproductive cattle.**
- v) **To encourage use of fallow land and bunds for forestry purpose.**
- vi) **Involvement of Village communities in the forest protection and various afforestation schemes. Trainers and Guides in the form of NGOs, Teachers Students and volunteers.**
- vii) **Capacity building trainings for Forest Staff in the field of forest extension and communication and self development.**

SECTION: 12.13: FOREST RIGHTS Act (FRA):

**Forest Rights Act, 2006 are important for securing livelihood of the forest communities and for strengthening local self governance of forest and natural resources. This has finally paved the way to undo the 'historic injustice' done to the tribals and others forest dwellers. There are no individual's forest right till 31/05/2014.**

In Amravati Forest Division, Community Forest Right titles have been distributed to five villages till date i.e. Nayakheda, Paivihir, Upathkheda, Khatijapur, and Hattighat of Achalpur Taluka in Paratwada Range. As per this FRA title over total area of 2352.564 ha. have been issued.

As empowered under section 3(2) in the Act, the Dy.C.F. Amravati has sanctioned 10 projects of different agency for use of forest land for school, road, irrigation structure, and drinking water pipeline and transmission line. Total forest land diverted is 5.636 ha.

SECTION: 12.14: SURVEY AND MAPS:

12.14.1.1. **Eight sets of fresh maps on 1:15,000 scale have been prepared with the help of GIS application center at Conservator of Forests, Working Plan, Amravati s follows:**

1. **Management maps - 6 sets (4 cut and mounted + 2 uncut and mounted).**
2. **Stock maps - 2 sets (uncut and mounted)**

**The distribution of these maps will be as follows:**

12.14.1.2. Conservator of Forest, Working Plan Division : **One rough uncut and mounted set showing the existing compartment boundaries and stocking details, has been prepared based on which the master sets of stock maps and management maps showing the compartments, coupes, felling series, Working Circle and other management details will be prepared.**

- |                   |   |                                  |
|-------------------|---|----------------------------------|
| i) Management map | - | 1 master set (uncut and mounted) |
| ii) Stock map-    | - | 1 master set (uncut and mounted) |

12.14.1.3. Deputy Conservator of Forests, Amravati Forest Division:

- |                     |  |
|---------------------|--|
| i) Management map - | 3 sets (1 uncut and mounted + 2 cut and mounted) |
| ii) Stock map       | - 1 set (uncut and mounted)                      |

12.14.1.4. Additional Principal Chief Conservator of Forest, Working Plan Circle, (East) Nagpur.

- |                      |                         |
|----------------------|-------------------------|
| i) Management maps - | 1 set (cut and mounted) |
|----------------------|-------------------------|

12.14.1.5. Chief Conservator of Forest, (Territorial):

- |                     |                         |
|---------------------|-------------------------|
| i) Management map - | 1 set (cut and mounted) |
|---------------------|-------------------------|

**Any alteration in the forest areas due to disforestation (as per the gazette notifications) or due to compensatory afforestation has been shown in the maps.**

12.14.1.6. **In addition the following maps has been prepared -**

i) Reference map: **This Working Plan include a reference map 1:1, 50,000 scale showing Working Circles, Range boundaries, Roads and other details.**

ii) Grazing map: **Two maps showing the grazing units have been prepared on 1: 25,000 scale, one copy of which is to be supplied to the Deputy Conservator of Forest, Amravati Division and the other is to be retained in the Working Plan office Amravati**

SECTION: 12.15: POSITION OF ENCROACHMENTS:

12.15.1.1. **As per the information total encroacher and forest land encroach in Amravati Forest Division on 31/07/2014 is as follows.**

**No. of Encroacher - 308 and Total Area - 35.251 ha.**



CHAPTER – XIII  
CONTROL AND RECORDS

SECTION :13. 1 : CONTROL AND RECORDS :

13.1.1..The following will be maintained in the division office :

- i) Control Form
- ii) Compartment History
- iii) Plantation and Nursery Registers.
- iv) Divisional Note Book.

13.2. CONTROL FORM : The record of all harvesting, subsidiary cultural operations, regeneration works and soil and moisture conservation works carried out as per the Working Plan prescriptions, will be maintained in the control forms. The prescribed proforma of the following control forms have been given in Appendix No.LIII in the volume II of this plan. Two sets of control forms will be prepared. One set will be kept in the divisional office and the other set will be the flying set for the use of the Conservator of Forests Working Plan Amravati. The flying set will be sent annually by the Deputy Conservator of Forests Amravati division, to the Conservator of Forests, Working Plan, Amravati not later than October 1 every year taking the necessary entries. All entries showing the deviations from the prescriptions will be underlined in red. The Conservator of Forests, Working Plan, Amravati will scrutinize it and will send it to the territorial C.C.F. along with his remarks to the A.P.C.C.F. Working Plan, Nagpur not later than February 1 of the following year. The Additional Principal Chief Conservator of Forests, Working Plan in turn will forward them to the P.C.C.F. (Production and Management) for perusal and orders where required. C.C.F. (Territorial) will ensure that the required Control Form is being maintained as stipulated above by Office Inspection of DCF.

13.3. COMPARTMENT HISTORIES

13.3.1.: Compartment histories i.e. the record of various forestry activities and observations made in the past year, will be maintained in form nos. I to V as shall be given in the Appendix No.LIV in Volume II of this Plan.

Form I	:	Description of the Compartment.
Form II	:	Records of plantation and changes in the growing stock.
Form III	:	Records of operations and out-turns.
Form IV	:	Records of observations.
Form V	:	Records of injuries.

13.3.2. Each compartment must have a separate file for its records. Compartment histories 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 Forest Officer should fill in the necessary information and will send it to the Deputy Conservator of Forest Amravati division for scrutinizing, editing through the concerned Assistant Conservator of Forests, who after doing so, will get them typed and signed them. One copy of the forms will be filled in the divisional compartment history file while one copy each will be sent to the Range Forest Officer and the Conservator of Forest, Working Plan Division in the month of August. DCF Territorial will ensure that the required Control Form is being maintained as stipulated above by Office Inspection of RFO.

13.4 PLANTATION AND NURSERY REGISTERS : Plantation registers will be maintained for all the areas regenerated artificially and naturally in the Form Nos. 1 to 9 as have been given in the Appendix. No. LV & LVI in Volume II. Nursery registers will be maintained in Form Nos. 1 to 10. These forms shall be given in the Appendix No LVI in Volume II of this plan.

13.5. DIVISIONAL NOTE BOOK : The matters of divisional importance will be recorded under standard headings for records and ready reference in the divisional note-book. A brief note of the plantations will also be recorded by the Deputy Conservator of Forest, Amravati division under the appropriate heads. The form of divisional note book have been given in the Appendix. No.LVII in Volume II of this plan.



CHAPTER - XIV

FINANCIAL FORECAST IN AMRAVATI DIVISION  
FROM 2014-15 ONWARDS

SECTION 1. COST OF THE PLAN:

14.1.1. **The cost of preparing this plan is worked out by summing the expenditure incurred for the year 2010-11 and 2011-12 that amounts to Rs. 331.29 Lakhs, including the cost of stock mapping and enumeration works carried out by FRSS unit at Amravati. The cost of plan per hectare worked out is about Rs.637/ha. only.**

SECTION 2. COST-BENEFIT ANALYSIS:

14.2.1. **Intangible Benefits: It is an acknowledged fact that forest ecosystems have both the tangible and the intangible benefits to the mankind. They contribute to a great extent in terms of intangible benefits. However, it is not easy to assign economic value to the intangible benefits of the forests ecosystems. Professor T M Das (1980) has quantified the environmental services, provided by a medium sized tree of 50 tons over a period of 50 years, by assigning notional values by using surrogate market techniques, as given in the Table 11.2 (Proceedings of the Indian Science Congress, 1980).**

Table 14.1  
Table Showing Environmental Benefits Derived From A  
Medium Sized Tree 50 Tons During Its 50 Years Life Span  
(Excluding The Value Of Timber, Fruits And Flowers)

Sr. No.	Environmental Benefits	Single Tree (Lakhs)	Forest Type	
			Tropical in Lakhs/ha	Sub-tropical in Lakhs/ha
1	Oxygen Production	2.50	22.50	20.50
2	Conversion to Animal protein	0.20	01.80	01.64
3	Control of Soil Erosion	2.50	22.50	20.50
4	Recycling of Water and control of humidity	3.00	27.00	24.60
5	Shelter for Birds, Squirrels, Insects, Plants	2.50	22.50	20.50
6	Control of Air Pollution	5.00	45.00	41.00
	Total	15.70	141.30	128.74

14.2.2. **Thus, according to Das, one hectare of subtropical forests accrues environmental benefits of worth Rs. 128.74 Lakhs over a period of 50 years i.e. benefits of worth Rs. 2.60 Lakhs per hectare per year.**

14.2.3. **Hence, intangible benefits accruing from Amravati Division, having approx. 8048.00 ha of well-stocked forests @ of Rs.2.60 Lakhs per ha, are worth Rs.209.25 crore per year.**

14.2.4. **Tangible Benefits: The tangible benefits accruing from forests can be computed in economic terms from various goods and services ensuring from forests. The estimation/forecast of timber, poles, fuel wood, Tendu, Gum and other non-wood forest produce accruing from forests can be made with reasonable accuracy with the help of yield regulating formulae and the available market trends.**

14.2.5. **The approximate revenue expected from working of forests is given in Table No.14.2. The norms used for the financial forecasting are given in Table 14.3. Forecast for the implementation of this plan is given in the Appendix No.L.**

Table No. 14.2  
Statement showing Expected Revenue from working of forests in Amravati Division

Sr. No.	Working Circle	Expected Quantity Annually	Approx. Rate In Rs	Expected Revenue Rs in lacs
1	<b>Improvement W.C.</b>			
	a) Teak timber b) Fire wood	450 cum 2600 cum	30000/ cum 2000/ cum	135.00 52.00
4	<b>NTFP</b>			
	a) Tendu b) Sitafal c) Grass	3500 std bags 10 MT 75 MT	Lumpsum Lumpsum Lumpsum	17.50 6.00 1.00
	Total			211.50

Table No. 14. 3.  
Rates used for estimating expenditure for the working plan prescriptions  
(Daily wage rate Rupees 270.00)

Sr. No.	Particulars of work	Unit of work	Man days/unit	Labour component in %	Amount/ Rupees
1	<b>Demarcation and Marking</b>	<b>Hectare</b>	<b>4.5</b>	<b>90%</b>	<b>1215.00</b>
2	<b>Preparation of Grid wise Treatment Map</b>	<b>Hectare</b>	<b>1</b>	<b>90%</b>	<b>270.00</b>
3	<b>Singling of coppice shoots, etc.</b>	<b>Hectare</b>	<b>1</b>	<b>96%</b>	<b>270.00</b>
4	<b>Soil and moisture conservation</b>				
5	<b>Gully plugging (nala bunding)</b>	<b>Cu.m.</b>	<b>0.92</b>	<b>96%</b>	<b>248.40</b>
6	<b>Continuous Contour Trenches (CCT)</b>	<b>Meter</b>	<b>0.085</b>	<b>96%</b>	<b>22.95</b>
	Coupe working				0.00
7	<b>Timber harvesting</b>	<b>Cu.m.</b>	<b>9.5</b>	<b>75%</b>	<b>2565.00</b>
8	<b>Firewood extraction</b>	<b>Stacks</b>	<b>3.5</b>	<b>80%</b>	<b>945.00</b>
	Removal of wind fallen				
9	<b>Timber</b>	<b>Cu.m.</b>	<b>9.5</b>	<b>75%</b>	<b>2565.00</b>
10	<b>Fuel</b>	<b>Stacks</b>	<b>4.5</b>	<b>80%</b>	<b>1215.00</b>
11	<b>Thinning</b>	<b>Cu.m.</b>	<b>9.5</b>	<b>75%</b>	<b>2565.00</b>
12	<b>Cutback Operations</b>	<b>Hectare</b>	<b>6</b>	<b>96%</b>	<b>1620.00</b>
13	<b>Cleaning</b>	<b>Hectare</b>	<b>8</b>	<b>96%</b>	<b>2160.00</b>
	Afforestation/plantation				
14	<b>Fencing including live hedge</b>	<b>Hectare</b>	<b>43</b>	<b>85%</b>	<b>11610.00</b>
15	<b>Planting &amp; sowing on fencing</b>	<b>Hectare</b>	<b>2</b>	<b>75%</b>	<b>540.00</b>
16	<b>PPO/PYO (including fencing)</b>	<b>Hectare</b>	<b>60</b>	<b>85%</b>	<b>16200.00</b>
17	<b>FYO (First year operations)</b>	<b>Hectare</b>	<b>95.1</b>	<b>77%</b>	<b>25677.00</b>
18	<b>SYO (Second year operations)</b>	<b>Hectare</b>	<b>40.9</b>	<b>92%</b>	<b>11043.00</b>
19	<b>TYO (Third year operations)</b>	<b>Hectare</b>	<b>20.7</b>	<b>93%</b>	<b>5589.00</b>
20	<b>4th YO (Fourth year operation)</b>	<b>Hectare</b>	<b>15.15</b>	<b>93%</b>	<b>4090.50</b>
21	<b>5th YO (Fifth year operations)</b>	<b>Hectare</b>	<b>15.15</b>	<b>93%</b>	<b>4090.50</b>
	Maintenance				
22	<b>Road</b>	<b>Km.</b>	<b>38</b>	<b>95%</b>	<b>10260.00</b>
23	<b>1/5th boundary demarcation</b>	<b>Km.</b>	<b>7</b>	<b>80%</b>	<b>1890.00</b>
24	<b>Fire protection length</b>	<b>Km.</b>	<b>6.5</b>	<b>96%</b>	<b>1755.00</b>
25	<b>Fire protection area</b>	<b>Hectare</b>	<b>1</b>	<b>96%</b>	<b>270.00</b>
	Joint Forest Management				
26	<b>Awareness generation</b>	<b>Village</b>	<b>12</b>	<b>20%</b>	<b>3240.00</b>
27	<b>Micro plan preparation</b>	<b>Village</b>	<b>88</b>	<b>50%</b>	<b>23760.00</b>
28	<b>Training for NTFP collection</b>	<b>Round</b>	<b>30</b>	<b>50%</b>	<b>8100.00</b>
29	<b>Wildlife habitat improvement</b>	<b>Round</b>	<b>20</b>	<b>75%</b>	<b>5400.00</b>
30	<b>Fixing boundary pillars</b>	<b>Km.</b>	<b>70</b>	<b>30%</b>	<b>18900.00</b>

The abstract of benefits and costs as a result of this plan is given as follows:

<b>Annual estimated expenditure for the prescribed operations</b> (30% of annual tangible benefit.)	=	<b>63.45 Lakhs</b>
<b>Annual tangible benefit from the forest</b>	=	<b>211.50 Lakhs</b>
<b>Annual intangible benefit as calculated above</b>	=	<b>20925.00 Lakhs</b>
<b>Total benefits (both tangible and intangible) from the Forests</b>	=	<b>21136.50 Lakhs</b>
<b>Social Cost-Benefit Ratio is 63.45 Lakhs: 21136.50 Lakhs</b>		

Or 1:333

**Thus, the above Cost-Benefit Ratio favours the scientific management of forests, as prescribed, in this Working Plan.**

**14.2.6 The Net Present Value (NPV) of forest of Amravati Division has been assessed base on Govt. Resolution No. S-30/1106/CR 189/F-10, dated 28.11.2008 as given below.**

Table 14.4  
Table Showing Net Present Value (NPV) of Forest of Amravati Division.

Sr. No.	Working Circle	Area (in ha.)	Rate (Rs.in lakh/ha.)	NPV (Rs.in lakhs)
1	SCI WC	8048.053	6.26	50380.81
2	IWC	6476.900	6.26	40545.39
2	Afforestation WC	21248.315	5.63	119628.01
3	Protection WC	1223.023	8.03	9820.87
4	Babul Ban WC	4025.884	5.63	22665.73
5	Kuran WC	7220.659	4.38	31626.49
6	Urban Forestry WC	2166.701	5.63	12198.53
7	Miscellaneous WC	1622.346	4.38	7105.88
	Total :	52031.881	-	293971.71

#### SECTION 4: SOURCE OF FUNDING

14.4.1 Non Plan/Plan Schemes: **Works prescribed by the Working Plan will be done through the funds made available under Non Plan / Plan schemes. They are mainly for felling of coupes and subsequent silvicultural operations and operations to secure adequate Natural Regeneration. If the NR is inadequate it is supplemented by Artificial Regeneration. CBO, Cleaning, Thinning, Rootstock Management, Fire Protection and Boundary Demarcation etc are to be done from these funds.**

14.4.2 FDA: **Certain works like Entry Point Activity, Plantation of choice of local people and soil and moisture conservation works will be done through this funding source.**

14.4.3 M.G.NREGA: **Works like soil and moisture conservation works will be done through this source.**

14.4.4. DPC: **Soil and moisture conservation works will be done through this funding source.**



CHAPTER XV

SUMMARY OF PRESCRIPTIONS

PART I

SECTION 1. SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED:

15.1.1 Area of Plan: **Total area of Amravati Forest Division is 52031.881 ha. Range wise distribution of area is as under:**

Table 15.1  
Range wise distribution of area of Amravati Division

Sr. No	Name of Range	Reserved Forest		Protected Forest	Un classed forests	Total Area
		'A' Class	'C' Class			
1	Amravati	4447.664	5663.233	0.000	29.050	10139.947
2	Chandur Rly	6001.820	5289.149	0.000	54.770	11345.739
3	Morshi	5072.935	7023.990	4.940	99.370	12201.235
4	Paratwada	3591.080	4467.325	58.210	28.500	8145.115
5	Warud	6888.748	3276.527	6.630	27.940	10199.845
	Total	26002.247	25720.224	69.780	239.630	52031.881

15.1.2 Forest Type: **As per Champion and Seth's classification the forest type is 5A/C1, Southern Tropical Dry Deciduous Forests.**

15.1.3. Floral Diversity: **In Amravati District total 1209 species of plants have been reported so far which are as under:**

Table 15.2  
Floral Diversity of Amravati District

Trees	Shrubs	Herbs	Grasses	Climbers	Total
91	220	679	123	96	1209

15.1.4. Faunal Diversity: **Faunal diversity in Amravati District is as under:**

Table 15.3  
Faunal Diversity of Amravati District

Pieces	Amphiba	Reptiles	Aves	Mammals	Total
96	8	54	341	80	579

15.1.5. Human Population: **Human population of the village included in Amravati Division is 2,888,445 (2011 census)**

15.1.6. Cattle Population: **Cattle population of Amravati District as per 2012-13 census is given in Table No.15.4.**

Table 15.4  
Cattle population of Amravati District (as per 2012-13 census)

Cattle	Cow / Bull	Sheep	Goat	Buffaloes	Total
<b>Numbers</b>	<b>125042</b>	<b>49519</b>	<b>239998</b>	<b>50468</b>	<b>465027</b>
<b>Percentage</b>	<b>26.89%</b>	<b>10.65%</b>	<b>51.61%</b>	<b>10.85%</b>	<b>100%</b>

15.1.7. Stem Analysis for Site quality IV: **For Teak (seed origin) CAI/MAI culminates at the age of 70 years, corresponding to 105 cm girth of breast height. For Teak (coppice origin) it culminates at the age of 30 years corresponding to 75 cm girth at breast height.**

15.1.8. Stock Mapping: **The result of stock mapping is as follows:**

Table 15.5  
Stock mapping results of Amravati Division.

Teak	Mixed	Bamboo	Old Plantations	Under stocked	Cultivation	Under Water	Blank	Total
<b>4460.06</b>	<b>27558.525</b>	<b>30.177</b>	<b>2687.705</b>	<b>9635.899</b>	<b>247.415</b>	<b>51.514</b>	<b>7336.066</b>	<b>52007.361</b>

15.1.9. Enumeration Results: **Enumeration results shows that there are 251 trees /ha in SCI Working Circle, 91.278 trees/ha in Afforestation Working Circle and 124.777 trees /ha in Kuran Working Circle and 24.517 trees/ha. in Miscellaneous Working Circle of last working plan.**



PART II

SECTION 2. FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED.

15.2.1 Functional Classification: **Functional classification of forests of Amravati Forests Division is as under:**

Table 15.6  
Functional Classification of forests of Amravati Division.

Sr. No.	Category	Comptt. No.	Area in ha.				%age	
			R.F. (in ha.)		P.F.	U.F.		Total
			"A" Class	"C" Class				
1	Protected Forest	9	1223.023	0	0	0	1223.023	2.35
2	Tree Forest	87	14524.953	0	0	0	14524.953	27.92
3	Miner Forest	863	5490.731	20647.632	4.940	183.840	26327.143	50.60
4	Pasture Land	103	4348.359	3986.057	0	0	8334.416	16.02
5	Miscellaneous Forest	45	415.181	1086.535	64.84	55.79	1622.346	3.12
		1107	26002.247	25720.224	69.780	239.630	52031.881	100.00

15.2.2 Distribution of Area in Working Circles: **Area of Amravati Forests is distributed in Working Circles as given in Table No. 15.7.**

Table 15.7  
Distribution of Area in Working Circles

Sr. No.	Working Circle	Comptt. No.	R.F. (in ha.)		Protected Forest	Un classed Forest	Total	%age
			"A" Class	"C" Class				
1	Selection Cum Improvement WC	48	8048.053	0	0	0	8048.053	15.47
2	Improvement Working Circle	39	6476.900	0	0	0	6476.900	12.45
3	Afforestation WC	345	1134.475	19925.078	4.940	183.840	21248.315	40.84
4	Protection WC	9	1223.023	0	0	0	1223.023	2.35
5	Babul Ban WC	483	4025.884	0	0	0	4025.884	7.74
6	Kuran WC	96	3374.725	3845.934	0	0	7220.658	13.88
7	Urban Forestry WC	42	1304.024	862.677	0	0	2166.701	4.16
8	Miscellaneous WC	45	415.181	1086.535	64.84	55.79	1622.346	3.12
	Total	1107	26002.247	25720.224	69.78	239.63	52031.881	100.00

15.2.3. Selection cum Improvement Working Circle:

Range wise Distribution of Area.

Sr. No.	Name of Range	Range Area	SCI Area	% wrt Range	% wrt Division
1	Amravati	10139.947	-	-	-
2	Chandur Rly.	11345.739	-	-	-
3	Paratwada	8145.115	-	-	-
4	Morshi	12201.235	1405.401	11.52%	2.70%
5	Warud	10199.845	6642.652	65.12%	12.77%
	Total S.C.I. "A" Class	52031.881	8048.053	-	15.47%

Silvicultural System: **Selection Cum Improvement Working Circle felling with rootstock management and Artificial Regeneration.**

Felling Cycle: **10 years.**

Agency of harvesting: **Departmental through FLCS or JFMCs.**

Enumeration: **All trees of pre harvestable girth class and above will be enumerated. Harvestable girth for coppice teak is 75 cms. g.b.h. and for seed origin teak and other species it is 120 cms. g.b.h.**

Treatment Map: **Area will be divided in A, B, C, and D classes. In A area SMC works will be taken out, in B area Afforestation works will be carried out, in C area thinning of congested pole crop will be taken up, and in D areas main felling will be carried out.**

Marking Rules: **All dead trees, after retaining 2 dead trees per ha and malformed trees, all live high stumps and all except one vigorously growing coppice shoot per stool will be marked for felling. For mature trees no. of trees to be marked for felling is given in detail in the prescription of working circle.**

15.2.3A:- Improvement Working Circle:

Table 15.8  
Range wise Distribution of Area.

Sr. No.	Name of Range	Range Area	IWC Area	% wrt Range	% wrt Division
1	Amravati	10139.947	-	-	-
2	Chandur Rly.	11345.739	5322.151	46.90	10.22
3	Paratwada	8145.115	1154.749	14.17	2.22
4	Morshi	12201.235	-	-	-
5	Warud	10199.845	-	-	-
Total S.C.I. "A" Class		52031.881	6476.900	-	12.44

Silvicultural System: **Improvement felling with rootstock management and AR.**

Felling Cycle: **10 years.**

Agency of harvesting: **Departmental through FLCS or JFMCs.**

Treatment Map: **In A area SMC works will be taken out, in B area Afforestation works will be carried out, in C area thinning of congested pole crop will be taken up, and in D area improvement felling will be carried out.**

Marking Rules: **All dead trees, after retaining 2 dead trees per ha and malformed trees, all live high stumps and all except one vigorously growing coppice shoot per stool will be marked for felling. Only marking for Improvement of the crop shall be carried out.**

15.2.4. Afforestation Working Circle: **Range wise distribution is as under:-**

Table No.15.9

Sr. No.	Range	Range Area	No. of Comptt.	RF "A" Class	RF "C" Class	P.F	U.F	Total Area Allotted to AWC
1	Amravati	10139.947	44	0	3547.086	0	19.8	3566.886
2	Chandur Rly	11345.739	65	121.689	4347.802	0	8.23	4477.721
3	Paratwada	8145.115	44	424.203	3860.351	0	28.5	4313.054
4	Morshi	12201.235	117	588.565	5071.846	4.94	99.37	5764.721
5	Warud	10199.845	75	0	3097.993	0	27.94	3125.933
Total		52031.881	345	1134.457	19925.078	4.94	183.84	21248.315

Area will be divided into 17 Afforestation working series, each having 10 annual coupes. The detail of the coupes and their sequence is given in Appendix No. XL.

Silvicultural System: Suitable areas with deep soil will be selected for effective planting with protection measures. Cooperation of the local people will be sought in management of the plantation through Joint Forest Management Committees.

Working Cycle: 10 years.

Treatment: Afforestation/plantation works are to be carried out in suitable area.

15.2.5. Protection Working Circle: Total area under this Working Circle is 1223.023 ha. Distribution of Range wise area is given below:

Table 15.10  
Range wise Distribution of Area.

Range	Reserved Forests (ha)		Protected Forests	Un classed Forests	Total)
	"A" Class	"C" Class			
Amravati	-	-	-	-	-
Chandur Rly	-	-	-	-	-
Morshi	-	-	-	-	-
Paratwada	1223.023	-	-	-	1223.023
Warud	-	-	-	-	-
Total -	1223.023	-	-	-	1223.023

Working Cycle: 10 years.

Agency of working: Departmental.

Treatment: SMC Works along with regeneration activity.

Babul Ban Working Circle: This Working Circle includes all the Babul Bans of Amravati Forest Division. Babul Bans exists in all five Ranges of this division. Area details are as follows:-

Table 15.11  
Table showing the details of the area.

Sr. No.	Name of Range	Range Area	"A" Class Babul Ban	% wrt	% wrt	No. of Comptt.
				Range	WC	
1	Amravati	10139.947	1236.862	12.20	30.72	109
2	Chandur Rly.	11345.739	209.175	1.84	5.20	26
3	Paratwada	8145.115	458.022	5.62	11.38	81
4	Morshi	12201.235	2000.393	16.40	49.69	237
5	Warud	10199.845	121.432	1.19	3.01	30
Total		52031.881	4025.884	-	100	483

Silvicultural System: The Silvicultural system shall be clear felling supplemented by artificial regeneration.

Working Cycle: 10 years.

Agency of working: Departmental or JFMCs.

Treatment: Babul and other species plantations will be carried out.

Kuran Working Circle: **Total area under this Working Circle is 7220.659 ha. Distribution of Range wise area is given below:**

Table 15.12  
Total Area of Kuran Working Circle

Range	RF 'A' Class		RF 'C' Class		RF 'C' Class Grass Ramna		Total Comptt Nos.	Total Area
	Comptt Nos.	Area	Comptt Nos.	Area	Comptt Nos.	Area		
<b>Amravati</b>	<b>15</b>	<b>1978.83</b>	<b>08</b>	<b>650.775</b>	<b>04</b>	<b>580.862</b>	<b>27</b>	<b>3210.467</b>
<b>Chandur Rly.</b>	<b>02</b>	<b>239.888</b>	<b>02</b>	<b>226.543</b>	<b>06</b>	<b>713.594</b>	<b>10</b>	<b>1180.025</b>
<b>Paratwada</b>	<b>5</b>	<b>302.533</b>	<b>05</b>	<b>405.702</b>	<b>00</b>	<b>00</b>	<b>10</b>	<b>708.235</b>
<b>Morshi</b>	<b>14</b>	<b>853.474</b>	<b>23</b>	<b>624.307</b>	<b>09</b>	<b>480.904</b>	<b>46</b>	<b>1958.685</b>
<b>Warud</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>03</b>	<b>163.247</b>	<b>03</b>	<b>163.247</b>
Total	36	3374.725	38	1907.327	22	1938.607	96	7220.659

Rotation: **5 years. Each grazing series is divided in to three coupes and each coupe will be closed for grazing in rotation for two years.**

Treatment: **Soil and Moisture Conservation works, eradication of weeds and burning, broadcasting of grass seeds of valuable species such as Sheda, Pawnya, Marvel etc, introduction of fodder yielding trees.**

Urban Forestry Working Circle: **Total area under this Working Circle is as follows: -**

Table 15.13  
Total Area of Urban Forestry Working Circle

Range	RF 'A' Class		RF "C" Class		Total Comptt Nos.	Total Area
	Comptt Nos.	Area	Comptt Nos.	Area		
<b>Amravati</b>	<b>09</b>	<b>1216.366</b>	<b>07</b>	<b>849.161</b>	<b>16</b>	<b>2065.527</b>
<b>Chandur Rly</b>	<b>24</b>	<b>75.892</b>	<b>00</b>	<b>00</b>	<b>24</b>	<b>75.892</b>
<b>Paratwada</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>
<b>Morshi</b>	<b>01</b>	<b>11.766</b>	<b>01</b>	<b>13.516</b>	<b>02</b>	<b>25.282</b>
<b>Warud</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>
Total	34	1304.024	08	862.677	42	2166.701

Treatment: **Nature Interpretation Centres be developed at eco-tourism spots so as to raise awareness among students and visitors. Centres be provided with trophies, models, gadgets, Information boards, nature quiz, dos and don'ts.**

**Biodiversity Parks, Arboretum, Bamboo cetum, Butterfly Park, Nakshatravan, Smritivan, Medicinal Plant Garden, Forest Park may be developed at appropriate places.**

**Nature trails/Nisrag Paulwat may be developed for walk in nature.**

15.2.6. Bamboo (O) Working Circle: **Naturally occurring and Bamboo plantation area of Amravati Division.**

Treatment: **Exploitation of Bamboo with 4 year cutting cycle**

15.2.7. Old Plantation (O) Working Circle: **Plantation area of Amravati Division.**

Treatment: **Treatments prescribed are thinning and cleaning. Works are to be carried out as per sanctioned scheme.**

15.2.8. N.T.F.P. (O) Working Circle: **This Working Circle also comprises the entire area of Division.**

Minor Forest Produce (M.F.P.) : **The important N.T.F.P. found in the Division is Moha flowers, Moha fruit, Tendu, Kulu gum, Salai gum, Dhawada gum, Lac, Charoli, , Neem seeds , Biba, Sitafal, etc.**

Medicinal Plants: **The important medicinal plants found in this division are, Amaltas, Behada, Biba, Palas, Umbar, Jambhul, Karanj, Chandan etc.**

Treatment: **Fire Protection Measures ,Training for NTFP collection , Documentation of NTFP , Non destructive collection of NTFP , Tending and Soil Working , Planting , Ban on felling**

Agency for Collection. : **JFMC or Forest Department.**

15.2.9. Wild Life (O) Working Circle: **Total area of Amravati Division.**

Treatment: **Treatments prescribed are mainly Protection, habitat development supported by awareness.**

15.2.10. Financial Implications:

<b>Annual estimated Expenditure</b>	<b>=</b>	<b>63.45 lakhs.</b>
<b>Annual estimated Revenue</b>	<b>=</b>	<b>211. 50 lakhs.</b>



The DWPR of Amravati Forest Division was discussed by the State Level Committee for approval of Working Plan on 24 & 25<sup>th</sup> September, 2014. The minutes of the meeting have been circulated vide PCCF (HoFF) letter No.Desk-14/WP/SLCmeeting/914/2014-15, Nagpur dt.15/11/2014.



**(Neenu Somaraj)**  
Dy.Conservator of Forests,  
Amravati Forests Division,  
Amravai.

**(Kiran Gitte)**  
Collector,  
Amravati.



**(P.K.Mahajan)**  
Conservator of Forests,  
Working Plan,  
Amravai.



**(M.Karunakaran)**  
Add.Principal Chief Conservator of Forests,  
Working Plans (East)  
Nagpur.



**(Sanjeev Gaur)**  
Chief Conservator of Forests,  
(Territorial) Amravati.



**(Shree Bhagwan)**  
Add.Principal Chief Conservator of Forests,  
(BP&D) Nagpur.



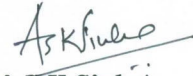
**(A.K.Mishra)**  
Add.Principal Chief Conservator of Forests,  
(Personnel) Nagpur.



**(Dr.P.N.Munde)**  
Add.Principal Chief Conservator of Forests,  
(Subordinate Cadre) & Guardian APCCF, Nagpur.



**(Dr.Mohan Jha)**  
Add.Principal Chief Conservator of Forests,  
(IT&P) Nagpur



**(A.S.K.Sinha)**  
Principal Chief Conservator of Forests,  
(P&M) Nagpur.



**(Anil Kumar Saxena)**  
Principal Chief Conservator of Forests &  
HoFF  
Maharashtra State,Nagpur.



**(V.K.Sinha)**  
Principal Chief Conservator of Forests,  
(Wild life)  
Maharashtra State, Nagpur.

**(S.K.Bhandari)**  
Chief Conservator of Forests,  
(Central)  
Representative of GoI  
Bhopal, (M.P.)

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS,  
(HoFF) MAHARASHTRA STATE, NAGPUR

Van Bhawan, Ramgiri Road, Civil Lines, Nagpur-440 001

Speed Post/E-mail

No.Desk-14/WP/SLC Meeting/914 /2014-15  
Nagpur, dated **15.11.2014**

To,  
Chief Conservator of Forests (T)  
Amravati/ Nagpur

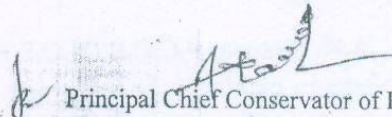
To,  
Conservator of Forests,  
Working Plan,  
Chandrapur/ Nagpur/Aurangabad/Amravati/Nashik/Pune/ *yavatmal*

Sub :- Minutes of the State Level Committee meeting held on 24<sup>th</sup> and 25<sup>th</sup>  
September, 2014 for approval of First & Second PWPRs.

The approved minutes of the State Level Committee meeting for PWPR & DWPR held on 24<sup>th</sup> and 25<sup>th</sup> September, 2014 at Vansabhagruha, Nagpur is enclosed for information and necessary action. Revised PWPR & DWPR of Divisions mentioned in the minutes should be submitted by the concern WPO & CCF(T) within a month after incorporating the suggestions/modifications suggested by the Committee for further necessary action.

Encl :- As above

**Draft of minutes approved  
by PCCF(HoFF).**

  
Principal Chief Conservator of Forests,  
(HoFF) M.S. Nagpur

Copy submitted with compliments along with enclosure to :-

- 1.Principal Chief Conservator of Forests, (HoFF) M.S., Nagpur
- 2.Principal Chief Conservator of Forests (Wildlife) M.S., Nagpur
- 3.Principal Chief Conservator of Forests (P & M) M.S., Nagpur

Copy submitted with compliments along with enclosure to :-

- 1.Additional Principal Chief Conservator of Forests (BPD), M.S., Nagpur
- 2.Additional Principal Chief Conservator of Forests (Personal), M.S., Nagpur
- 3.Additional Principal Chief Conservator of Forests (Campa), M.S., Nagpur

Quality only. Then give the old and new working plan area in the working circle wise area chart.

11. Dr. V.K.Sinha, in-charge PCCF(WL) Nagpur suggested that in S.C.I Working Circle under marking rule, only dead, diseased should be kept and delete the Malformed trees and also give details about the minimum-maximum regeneration.

## **II) AFFORESTATION WORKING CIRCLE:**

The prescription of Afforestation Working Circle was discussed in detail and the following suggestions were made by SLC:

12. Dr. V.K.Sinha, in-charge PCCF(WL) suggested to include Chart showing Zone of influence of existing trees so that it would be used during execution of AR works. He further suggested deleting marking of "malformed" stems.

13. Dr. Mohan Jha, APCCF(IT&P) suggested to remove the prescription of planting tall seedling and incorporate prescription for adopting improved nursery practices for raising quality seedlings. He also suggested deleting "E" type areas in the treatment map.

14. Shri. Shree Bhagwan, APPCCF(BPD) suggested to incorporate a prescription on altering the sequence of working in coupes due to administrative reasons.

15. Shri A.K. Saxena, P.C.C.F (H.O.F.F) M.S. Nagpur also suggested not to use tall plants in plantation in forest and use small root trainer seedlings as prescription for the Afforestation working circle .

## **III) JFM(OVERLAPPING) WORKING CIRCLE:**

The prescriptions of JFM(Overlapping) Working Circle were discussed in detail and following suggestions were made by SLC:

16. Shri. Shree Bhagwan, APPCCF(BPD) suggested to incorporate the extent of LPG gas coverage in JFM Villages.

17. On Page no.165 under JFM(Overlapping Working Circle) under hygienic operation, committee suggested to delete unnecessary information and also to delete the paragraph no. 70.6 in Misc. regulations after checking all the details.

## **IV) WILDLIFE (OVERLAPPING) WORKING CIRCLE:**

The prescriptions of wildlife (Overlapping) working circle were discussed in detail and the following suggestions were made by SLC:

18. Dr. V.K.Sinha, in-charge PCCF(WL)suggested to incorporate the provision for monitoring of vaccination of livestock within 5 KM from the boundary of Protected Areas.

19. It was suggested that the word 'census' should be replaced by 'population estimation'.

20. Committee suggested that in this Working Circle the requirement of water holes should be assessed and the number of water holes be prescribed considering the sensitivity of the area.

**V) OTHER SUGGESTIONS:**

21. Shri A.K.Saxena, PCCF(HoFF) suggested to incorporate a separate working circle viz., "Urban Forest Working Circle" for the management of forest areas falling within the jurisdiction of Nagpur Metro Region.

22. Dr. V.K.Sinha, in-charge PCCF(WL)suggested incorporating the Growth statistics of various species from the previous plan.

23. Shri. A.S.K.Sinha,PCCF(P&M) suggested to rectify spelling mistakes wherever appeared.

24. He further suggested that in NTFP (Overlapping) Working Circle the availability of NTFP should be assessed and recorded.

The SLC unanimously gave in-principle approval to the Draft Working Plan of Nagpur Forest Division subject to incorporation of the changes and suggestions made by the members of the SLC in the final DWPR. PCCF (P&M) instructed the CF WP Nagpur and the APCCF (WP-Eest) to submit the DWPR after making corrections as per the suggestions of the committee within a month of receipt of minutes.

**AMRAVATI FOREST DIVISION PWPR-II (DWPR)**

8. Shri Bidarkar, A.C.F. W.P. Amravati made power point presentation of Draft Working Plan of Amravati Forest Division before the

committee. During deliberations, following points were discussed and suggestions were made by the committee members.

1. Shri A.S.K.Sinha PCCF(P&M) instructed that under Compensatory Afforestation area 5.32 ha should be expeditiously notified as 'Reserved Forest' and should be put in Afforestation Working Circle.

2. Shri. Shree Bhagwan, APPCCF(BPD) & Dr. V. K. Sinha, in-charge PCCF(WL) and all members raised doubt about the Natural Regeneration status shown as 07 seedling/ hectare and instructed that it should be re-checked.

3. Dr. Mohan Jha, APCCF(IT&P) Shri. Shree Bhagwan, APCCF(BPD) and Dr. V. K. Sinha, in-charge PCCF(WL) suggested that there were 09 Felling Series in SCI WC in previous plan, out of which 04 FS are fit to continue in SCI WC and remaining 05 FS should be transferred to IWC.

4. Different girth for Felling was prescribed for Coppice and Seed origin trees by WPO. Dr. V. K. Sinha, in-charge PCCF(WL) raised doubt about distinguishing Coppice and Seed origin trees and suggested to re consider this provision and keep only one felling girth class preferably at 70-85 cms.

5. Dr. V. K. Sinha, in-charge PCCF(WL) Nagpur suggested that the MAI-CAI curve should be checked and re-plotted and smoothed. In Working Circles where felling is not prescribed, the word "felling series" shall be replaced by "treatment series". In the Bar- Diagram for S.C.I working circle, Basal area shall be include instead of number of tree.

6. Shri A.S.K.Sinha PCCF(P&M) & Dr.V. K. Sinha, in-charge PCCF(WL) Nagpur pointed out that the Yield under SCI Working Circle is 0.6 cum/ha which appear very low. It should be re-verified by using Smithies formula and if they are found very less then these area should be transferred to Improvement Working Circle. For re-checking this work, WPO Amravati can take the help of Shri P.Kalyankumar WPO Nagpur.

7. Shri. Shree Bhagwan, A.P.P.C.F(BPD) M.S. Nagpur suggested that in S.C.I working circle, only item no.1,2 & 4 should be retained and delete the item no. 3 & 5 under special objective of management. In J.F.M management Working Circle, get the special objective corrected and rewrite it properly in sequential order.

8. Shri A.K. Saxena, P.C.C.F (H.O.F.F) M.S. Nagpur suggested that in the write-up about IWC, only dead, diseased trees should be kept and malformed trees should be deleted. In the marking technique, the word 'verification of marking by DyCF' shall be removed.

9. In the JFM (OL) WC, apart from small timber add the SMC, Waterholes etc.

10. The Misc. Working Circle should be shifted to Afforestation Working Circle.

11. Dr. V. K. Sinha, in-charge PCCF(WL) Nagpur suggested to delete the barbed wire fencing item and the degraded area should be treated under seed sowing in Kuran Working Circle as method of treatment.

12. He further suggested not to prescribe the clear felling in the Babul Ban Working Circle.

13. The ABCD method of treatment under AWC, KWC, Babul ban WCs should be revisited and changed. In Babul ban boundary demarcation should be prescribed.

14. In PWC, delete the Artificial Regeneration, Soil Moisture and Conservation work as method of treatment.

15. Accordingly, the Draft Working Plan Should be modified within a week and presented before the committee comprises of PCCF(P&M), APCCF(WP-East), APCCF(Eco-Tourism & WP) CCF(T) Amravati. A special meeting will be convened on 07.10.14 for this purpose before finalising the same.



**Subject -** Compliance of the changes and suggestions of the State Level Committee on the draft Working Plan of Amravati Forest Division meeting held on 25/09/2014 and resubmission of revised DWPR.

**No.Desk/02/** CF/WP/RS/ 237 / 2014-15  
**Amravati,** Dated - 19 November, 2014

**To,**  
**Additional Principal Chief Conservator of Forests,**  
**Working Plan (East)**  
**Ravi Nagar, Nagpur**

Reference - Your Office letter No.Desk-14/Wp/SLCmeeting/914, dated 15/11/2014.

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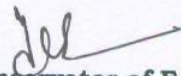
Draft working plan of Amravati Forest Division was presented in State Level Committee meeting held at "Van Sabha Gruah" Nagpur on 25<sup>th</sup> September, 2014. As per reference above the State Level Committee unanimously approved the Draft Working Plan of Amravati Forest Division, subject to incorporation of the changes and suggestions made by the members of the committee in the Final DWPR. Therefore, the compliance of the changes and suggestion of the SLC members is made accordingly and final DWPR is submitted for favour of information and necessary action.

Suggestions		Compliance
1.	Shri.A.S.K.Sinha PCCF(P&M) instructed that under compensatory Afforestation area 532 ha. should be expeditiously notified as "Reserve Forest" and should be put in Afforestation WC.	Out of 532 ha. except 58.21 ha. remaining area of 473.8 ha. is included in Afforestation WC 58.21 ha. area is allotted for rehabilitation therefore it is transferred in Miscellaneous WC.
2.	Shri.Shree Bhagwan, APCCF(BPD) & Dr.V.K.Sinha, in-charge PCCF(WL) and all members raised doubt about the Natural Regeneration status shown as 07 seedling/ hectare and instructed that it should be re-checked.	Status of Natural Regeneration has been rechecked now it is 349 seedlings/ha. correction has been made on page no.95 & 96 of DWPR.
3.	Dr.Mohan Jha, APCCF(IT&P) Shri.Shree Bhagwan, APCCF(BPD) & Dr.V.K.Sinha, in-charge PCCF(WL) suggested that there were 09 felling series in SCI WC in previous plan, out of which 04 FS are fit to continue in SCI WC and remaining 05 FS should be transferred to IWC.	05 felling series which are not fit to continue in SCI WC has been transferred to IWC. (Page no. 104 to 107)
4.	Different girth for felling was prescribed for coppice and seed origin trees by WPO. Dr.V.K.Sinha, in-charge PCCF(WL) raised doubt about distinguishing coppice and seed origin trees and suggested to re consider this provision and keep only one felling girth class preferably at 70-85 cms.	One girth for Teak coppice 75 cm girth is now prescribed. (Page no.98)

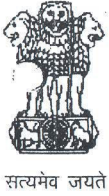
Suggestions		Compliance
5.	Dr.V.K.Sinha, in-charge PCCF(WL) suggested that the MAI & CAI curve should be checked and re-plotted and smoothened. In working circles where felling is not prescribed, the word "Felling Series" shall be replaced by "Treatment Series". In the Bar-Diagram for SCI working circle, Basal area shall be include instead of number of tree.	MAI & CAI curve rechecked, replotted and smoothened. "Felling Series" has been replaced by "Working Series". Basal area is included. (Page no. 99 and 106)
6.	Shri.A.S.K.Sinha PCCF(P&M) & Dr.V.K.Sinha, in-charge PCCF(WL) pointed out that the Yield under SCI working circle is 0.6 cum/ha. which appear very low. It should be re-verified by using Smithies formula and if they are found very less then these area should be transferred to IWC. For re-checking this work, WPO Amravati can take the help of Shri.P.Kalyankumar, WPO Nagpur.	Yield is reverified now it is 1.6 cum/ha. by using Smithie's formula. (Page no.100)
7.	Shri.Shree Bhagwan, APCCF(BPD) suggested that in SCI working circle, only item no.1,2 & 4 should be retained and delete the item no.3 & 5 under special objective of management. In JFM management WC, get the special objective corrected and rewrite it properly in sequential order.	Special objects of management has been revised and complied. (Page no.94)
8.	Shri A.K.Saxena, PCCF(HoFF) suggested that in the write-up about IWC, only dead, diseased trees should be kept and malformed trees should be deleted. In the marking technique, the word "verification of marking by Dy.CF." shall be removed.	Suggestion complied. (Page no.104 to 107)
9.	In the JFM(O) WC, apart from small timber add the SMC, waterholes etc.	Suggestion complied. (Page no.108)
10.	The Misc.WC should be shifted to AWC.	Area of Miscellaneous WC is the forest area diverted for non-forestry use, accordingly Miscellaneous WC is kept as it is.
11.	Dr.V.K.Sinha, in-charge PCCF(WL) suggested to delete the barbed wire fencing item and the degraded area should be treated under seed sowing in Kuran WC as method of treatment.	Suggestion complied. (Page no.124)
12.	He further suggested not to prescribe the clear felling in the Babul Ban WC.	Suggestion complied. (Page no.113 to 118)
13.	The ABCD method of treatment unser AWC, KWC, Babul Ban WCs should be revisited and changed. In Babul Ban boundary demarcation should be prescribed.	Suggestion complied.
14.	In PWC delete the Artificial Regeneration, SMC and Conservation work as method of treatment.	Suggestion complied. (Page no.111,112)
15.	Accordingly, the DWP should be modified with in a week and presented before the committee comprises of PCCF(P&M), APCCF (WP-East), APCCF (Eco-Tourism & WP) CCF(T) Amravati. A special meeting will be convened on 07/10/2014 for this purpose before finalizing the same.	Meeting held on 07/10/2014.
16.	Shri A.K.Saxena, PCCF(HoFF) and other members suggested for Urban Forestry Management Working Circle as there as many Forest Lands located in the city like Amravati, and big towns like Paratwada, Morshi and such lands should be identified in which development work like Biodiversity part, Arboretum museum must be taken with fencing and even compound wall.	Suggestion complied. Urban Forestry Management WC. (Page no.125 to 127)

<b>Suggestions</b>		<b>Compliance</b>
17.	Shri.A.S.K.Sinha PCCF(P&M) & Shri.Shree Bhagwan, APCCF(BPD) also suggested to create new working circle, viz. Urban Forestry Management Working Circle taking into consideration the total forest area within the city limit with prescribed demarcation and suitable plantation models. They further suggested for including this WC to other Forest divisions like Nagpur, Aurangabad where lot of urbanization is taking place and good amount of forest land available within the city and town limit in the district.	Suggestion complied. Urban Forestry Management WC. (Page no.125 to 127)

Encl. :- As above. (Revised Copy of DWPR)

  
**Conservator of Forests,  
Working Plan,  
Amravati.**

Copy submitted with compliments to The Principal Chief Conservator of Forests, (P&M).  
M.S. Nagpur for information.



सत्यमेव जयते

भारत सरकार  
GOVERNMENT OF INDIA  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय  
MINISTRY OF ENVIRONMENT, FORESTS  
& CLIMATE CHANGE

Speed Post

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/Ravi Shankar Nagar,  
भोपाल (म०प्र०) Bhopal-462016 (M.P.)  
फोन- 2466525, 2463102, 2465496  
अणुडाक /E-mail: apccfbhopal@gmail.com

File No. 12-9/2002(FOR)/228

Dated : 27/02/2015

To,

The Principal Secretary,  
Revenue and Forest Department,  
Govt of Maharashtra,  
Mantralaya,  
Mumbai-400032.

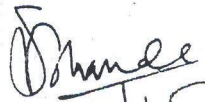
Sub. : Working Plan proposal for Amravati Forest Division written by Shri P.K. Mahajan (IFS)  
and Shri Neenu Somraj (IFS) for the period of 2015-16 to 2024-25.

Ref. : PCCF (P&M) letter No. Desk-14/WP/Amravati/1158/2014-15 dated 24.12.2014.

Sir,

With reference to the above mentioned subject, I am directed to convey the approval of the Central Government to the said working plan in accordance with the powers vested under Forest (Conservation) Act, 1980 and subject to the following conditions:

1. The currency of the Working Plan shall be for a period of 10 years i.e. from 2014-15 to 2023-24.
2. The orders of Hon'ble Supreme Court in the matter of Godaverman Therumalkpad Vs Union of India in W.P. (Civil) No. 202/95 and related interlocutory 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 Government of Maharashtra shall ensure that regeneration of forests is commensurate with felling 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 felling. 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 Apex Court 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 regeneration to be commensurate with felling.

  
24/02/15

6. Instruction/directions of the Central Government that may be issued in future  this regard shall be strictly complied with. Felling to be done by State Government only after seeking permission from Core Group constituted by the MoEF, New Delhi.
7. No forests bearing naturally grown trees shall be clear felled for any purpose whatsoever.
8. Standard thinning and silvicultural operations under the strict supervision of Assistant Conservator of Forests and above will be allowed as per norms to improve the health of growing stock while executing the prescriptions of the Working Plan. Selection felling shall not be allowed in working circle other than selection cum improvement working circle.
9. Prescriptions of micro plans for JFM (if made) should not deviate from the broad framework/guidelines of the working plan and shall be in accordance with various orders of Hon'ble Supreme Court.
10. 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/future years to compensate this removal.
11. No deviations shall be made from the prescriptions of working plan read with the conditions stipulated herein without prior approval of the Central Government under Forest (Conservation) Act, 1980. However, deviations of positive nature i.e. out of turn plantation carried out outside the worked area under any project, schemes and compensatory afforestation may be approved by the competent authority of the State Government.
12. Growth statistics of regeneration, record of its survival will be appended in Working Plan from time to time.
13. Midterm review of Working Plan shall be undertaken after five years so as to make any changes, if needed to meet the objectives, with the approval of Regional Office, Nagpur.
14. The exploitable girth of tree species and period of felling cycle shall not be lower than the approved in previous working plan.
15. In the vicinity of Nalas and water bodies felling shall not be undertaken.
16. Felling shall not be undertaken near the known resting places of wild animals.
17. Removal of dead and diseased trees will be undertaken under the supervision of an officer not below the rank of Assistant Conservator of forests.
18. All kind of felling including that of dead and diseased trees and for granting of right and concession as well as all illicit felling should be compiled along with the estimation of their stand volumes as per the same volume table used for the assessment of growing stock. This report shall be prepared annually working circle and compartment wise by the territorial DFO and shall be submitted to the C.F. Working Plan for this purpose within 02 months of the end of control year. Such removal shall be accounted for against the prescribed felling yield of the relevant year.

*Bhande*  
*m/c/10*

19. To ensure sustainable management of Non Timber Forest Produce (NTFP), scientific assessment of estimated quantity has to be done before their removal as per the prescription of Working Plan.
20. Status of rare, endangered and near extinct species shall be monitored closely and adequate measures will be taken for their protection and conservation.
21. Execution of Working Plan shall be in conformity with the National Forest Policy.
22. A definite plan has to be made remove encroachment and plant the vacated area by planting suitable local species.
23. Eco-tourism shall be undertaken on sustainable basis. No permanent structures shall be allowed at such sites. Temporary structures made up of local forest produce may be allowed for public. Such sites will be declared Plastic free zones and these eco-tourism sites will be managed by the forest department as per the prescriptions of the working plan.
24. Demarcation and consolidation of Forest Boundaries will be done adequately.
25. Gregarious flowering of bamboo, if any, must be reported to ICFRE and other institutes as mandated and the situation be dealt with standard protocol.
26. Exotic species should not be planted in Plan areas.
27. Proper mechanism has to be put in place to control illegal felling, grazing & fire. Proper fire plan shall be prepared and executed meticulously
28. The exploitable girth in SCI W.C. will not be less than that of Shri Vinod Kumar, Sh. Ramji Singh Yadav and Sh. I.G.P. Garad's Working Plan (2004-05 to 2013-14) for stands of similar nature.
29. Only 50% of normal yield, if silviculturally available, will be allowed for removal in case of teak, Dhawada, Bhirra, Chichawa, Salai, Mowari, Rohan, Shiwan, Shisham, Surya, Kasai, Mokra, Palas, Dhaman, Bhilwara, etc. In case of haldu, Ain, Bija, Tiwas, Kalam, lendia, Garadi, Khair it will be 33%, if silviculturally available.
30. A chapter will be added on activities of Forest Development Corporation as required under chapter IV of Working Plan Code, 2004.
31. Efforts should be made to undertake artificial regeneration of local species in such a way that it both serve the purpose of biodiversity conservation of meeting the demand of fuel wood, fodder and timber.
32. Babul Ban will not be expanded at the cost of local species. However Prosopis species can be replaced by local species.
33. Lac cultivation will be practiced as per the provisions of Forest (Conservation) Act, 1980.

*Banane*  
*21/11/15*

- Documents and appendices mandated in National Working Plan Code will be incorporated in the working Plan.
35. Attempts shall be made to grow trees outside forest areas to meet the local demand of small timber, fuel wood & fodder.
36. All the left over mandated chapters, appendices and maps will be added in Working Plan.
37. Proper mechanism is to be place in an adequate manner that such NTFPs are collected in sustainable manner.
38. Socio-economic survey is to be conducted with in first year of implementation of plan and the same be appended with the Working Plan.
39. Grassland will not be expanded at the expense of natural tree cover.
40. While managing forests provisions of the Biodiversity Act, 2002 shall be fully complied.
41. Cutback operations shall be undertaken as per standard norms.
42. 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 by the Central Government or the Apex Court under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy.

Yours faithfully,



(S.K. Bhandari)

Chief Conservator of Forest (Central)

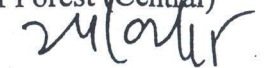
Copy to :

1. The Additional Director General of Forests (FC) Ministry of Environment and Forest Paryavaran Bhawan, CGO Complex, Lodi Road, New Delhi – 110 003
2. The Principal Chief Conservator of Forests, Govt. of Maharashtra, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur-440001.
3. The Chief Conservator of Forests, (Working Plan), Govt. of Maharashtra, Amravati.
4. The Divisional Forest Officer, Amravati Forest Division, Amravati-Maharashtra.



(S.K. Bhandari)

Chief Conservator of Forest (Central)



GOVERNMENT OF MAHARASHTRA

NO. FDM-2015/CR NO. 94/F-2  
Revenue & Forest Department  
Mantralaya, Mumbai 400032  
Date :- 9/ April, 2015

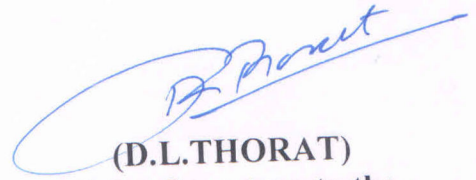
**SUBJECT: APPROVAL OF WORKING PLAN OF AMRAVATI  
FOREST DIVISION WRITTEN BY SHRI P.K.MAHAJAN  
& SHRI NEENU SOMRAJ, IFS FOR THE PERIOD OF  
2015-2016 TO 2024-2025.**

**MEMORANDUM :**

The undersigned presents compliments to the Principal Chief Conservator of Forests (Production & Management) and, with reference to his letter No. Desk-14/WP/Amravati/1158/2014-15, Dated 24.12.2014 on the above subject, is directed to convey the sanction of Government of Maharashtra to the working plan of AMRAVATI FOREST DIVISION, Maharashtra State for the period of 2015-16 to 2024-25 prepared by P.K.MAHAJAN, IFS & SHRI NEENU SOMRAJ, IFS.

The Government of India, Ministry of Environment and Forests has already conveyed its approval to the above said working plan vide its letter No. 12-9/2002(FOR)/228, Dated 27.02.2015 under certain conditions. These conditions should be strictly followed.

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



(D.L.THORAT)  
Joint Secretary to the  
Govt. of Maharashtra

To,

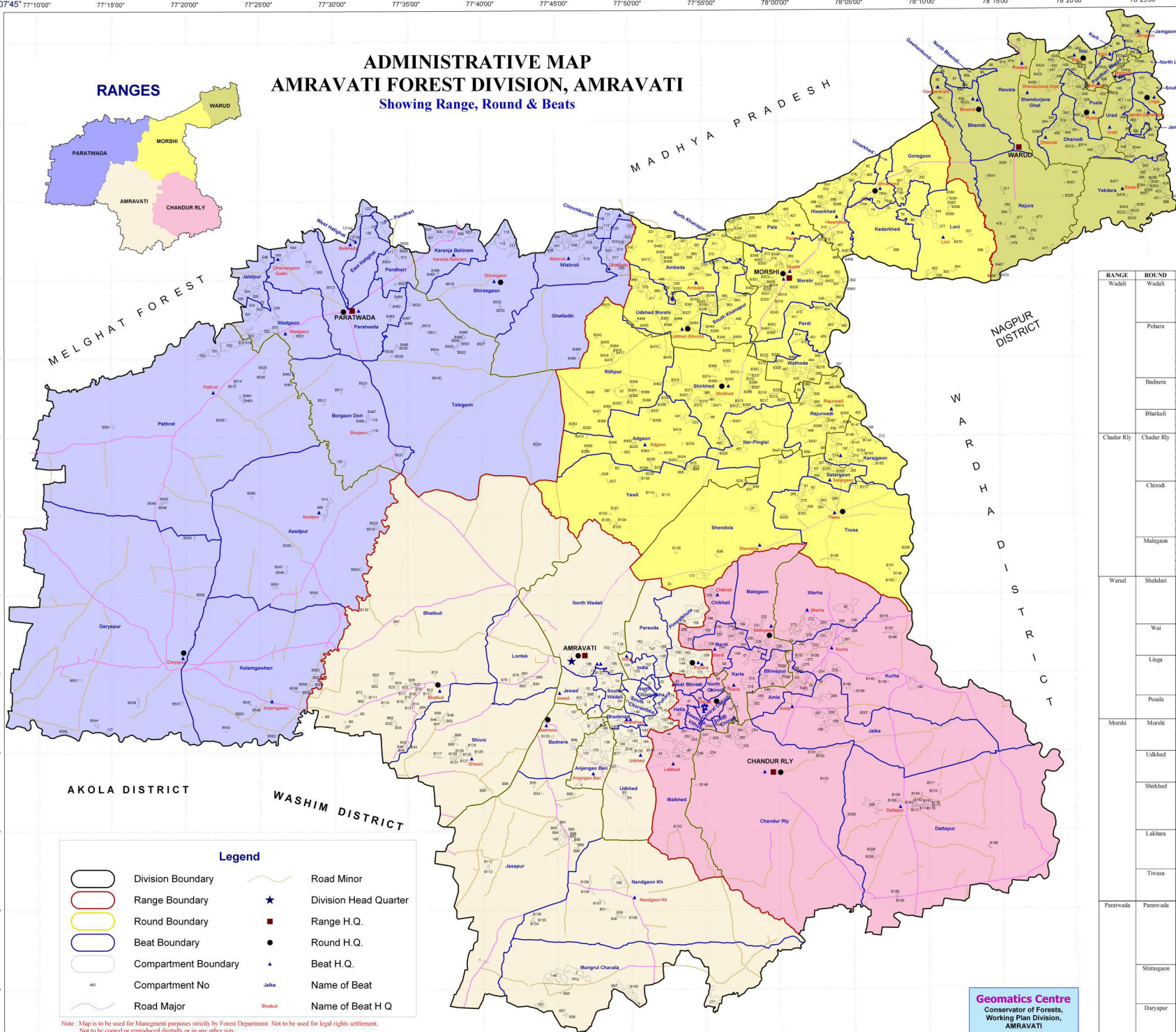
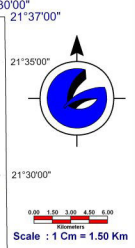
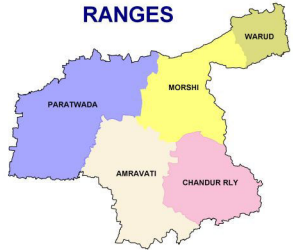
1. Principal Chief Conservator of Forests, (Production & Management)  
Maharashtra State, Nagpur.
2. Additional Principal Chief Conservator of Forests (Working Plan Circle-East), Nagpur.
3. Chief Conservator of Forests, (Working Plan ), Govt. of Maharashtra, Nagpur
4. Chief Conservator Forest (T), Amravati circle, Amravati.
5. Divisional Forest Officer, Nagpur Forest Division, Nagpur
6. Select File Desk F-2.

Email  
18/04/15  
3.14 Pm



# ADMINISTRATIVE MAP AMRAVATI FOREST DIVISION, AMRAVATI

## Showing Range, Round & Beats



AKOLA DISTRICT

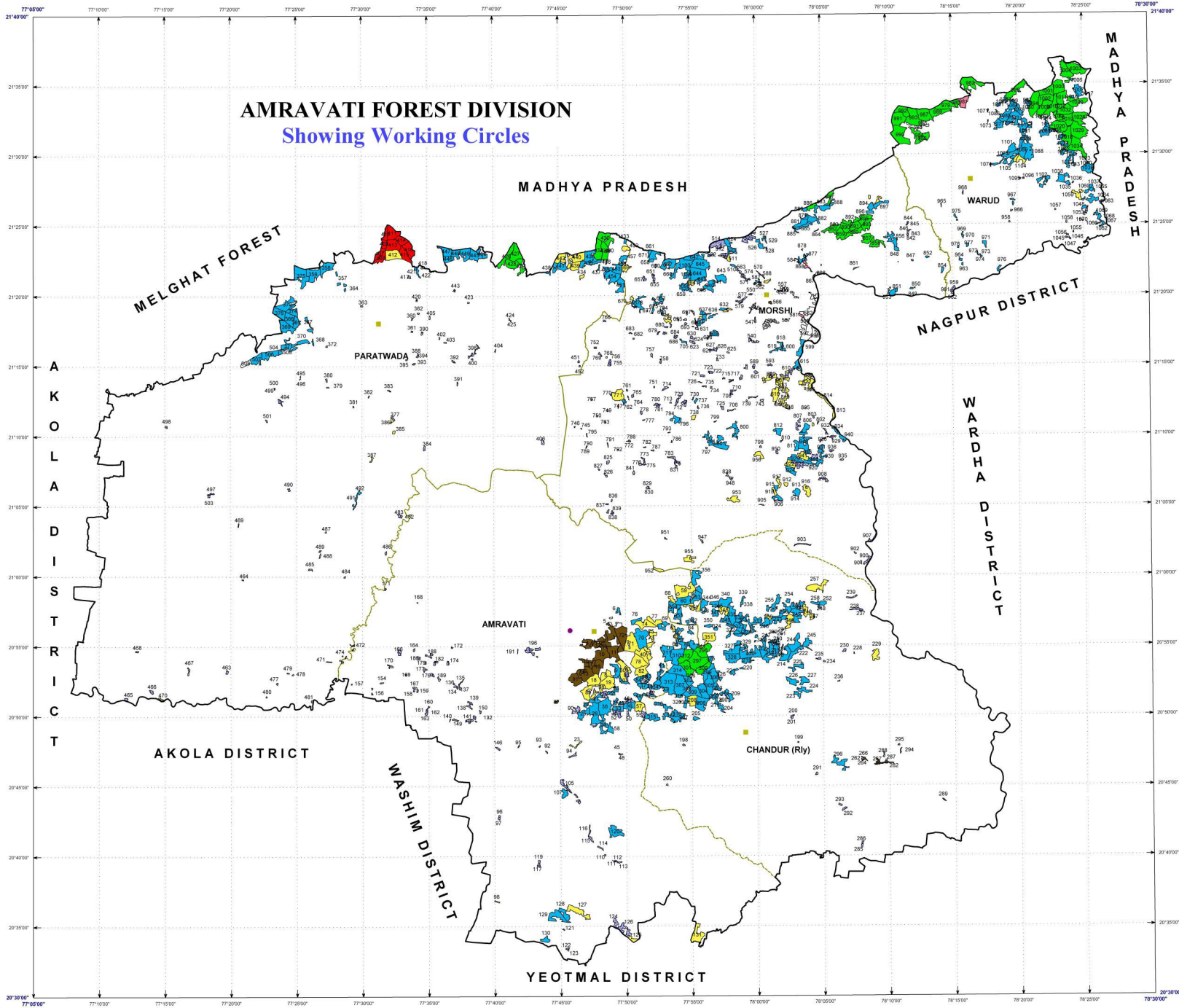
WASHIM DISTRICT

**Geomatics Centre**  
 Conservator of Forests,  
 Working Plan Division,  
 AMRAVATI

Legend	
	Division Boundary
	Range Boundary
	Round Boundary
	Beat Boundary
	Compartment Boundary
	Compartment No
	Road Major
	Road Minor
	Division Head Quarter
	Range H.Q.
	Round H.Q.
	Beat H.Q.
	Name of Beat
	Name of Beat H Q

Note: Map is to be used for Management purposes strictly by Forest Department. Not to be used for legal rights settlement. Not to be copied or reproduced digitally or in any other way.

RANGE	ROUND	Sr. No.	BEAT
Wadali	Wadali	1	North Wadali
		2	South Wadali
		3	Jewad
		4	Bhandad
Pohara	Pohara	5	Ajangon Bari
		6	Pohara
		7	Ulkhed
		8	Pimalkhuta
		9	India
		10	Paroda
Bodner	Bodner	11	North Chormba
		12	South Chormba
		13	Badner
		14	Jaspur
Bhatkuli	Bhatkuli	15	Nandgaon Kh.
		16	Mangal Chavala
		17	Shivani
Chadur Rly	Chadur Rly	18	Bhatkuli
		19	Lontek
		20	Chadur Rly
		21	Anka
		22	Jalka
		23	Kurha
		24	Warha
Chirodi	Chirodi	25	Dattapur
		26	North Chirodi
		27	Central Chirodi
Malegaon	Malegaon	28	South Chirodi
		29	Sawanga Yelkha
		30	West Chirodi
		31	Hatta
		32	Malkhed
		33	Karla
Wand	Wand	34	Bharsapur
		35	Malegaon
		36	Mardi
		37	Chikhali
		38	Rajura
		39	Karvala
		40	Bhendri
		41	North Bhendri
		42	Shekleri
		43	Gawankhand
Wai	Wai	44	Wai
		45	Karli
		46	Jangon
		47	Pandhari (Ward)
		48	Und
Linga	Linga	49	Linga
		50	Mahendri
		51	Jantha Ganeshpur
Pusla	Pusla	52	Eldara
		53	Shendgaon Ghat
		54	Pusla
		55	Dhanodi
Morshi	Morshi	56	Pala
		57	Morshi
		58	Pardi
		59	Wathoda
Ulkhed	Ulkhed	60	South Khanapur
		61	North Khanapur
		62	Ambada
		63	Ulkhed (Morshi)
Shirkhed	Shirkhed	64	Shirkhed
		65	Rajapur
		66	Adgaon
Ner-Pingla	Ner-Pingla	67	Ner-Pingla
		68	Rajurwadi
		69	Yaoli
Lakhara	Lakhara	70	Loni
		71	Kedarkhed
		72	Hivarkhed
		73	Umankhed
Tiwasa	Tiwasa	74	Goregaon
		75	Tiwasa
		76	Satargon
Paratwada	Paratwada	77	Shendhola
		78	Karagaon
		79	Paratwada
		80	Wadgaon
Shirgaon	Shirgaon	81	Boragan
		82	Talegaon
		83	West Hartighat
		84	East Hartighat
		85	Jalapur
		86	Pandhari
		87	Shirgaon
		88	Chikhambha
		89	Wishedi
		90	Karanga Bahram
Daryapur	Daryapur	91	Ghatkeli
		92	Daryapur
		93	Kalanganwan
		94	Asadpur
		95	Pandhri



**AMRAVATI FOREST DIVISION**  
**Showing Working Circles**



Scale - 1 Cm = 2 Km

**Legend**

- Division Boundary
- Division Head Quarter
- Range Boundary
- Range Head Quarter
- Compartment Boundary
- Compartment No

**WORKING CIRCLE**

- S.C.I.W.C.
- Protection W.C.
- Babulban W.C.
- AFF.W.C.
- Kuran W.C.
- MISC W.C.
- U.F.M.W.C.

**Geomatics Centre**  
 Conservator of Forests,  
 Working Plan Division,  
 AMRAVATI