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MAHARASHTRA STATE

WORKING PLAN
FOR
SIRONCHA FOREST DIVISION

SOUTH CHANDRAPUR FOREST CIRCLE,
CHANDRAPUR

PERIOD: 2005-06 TO 2014-15

•BY

RAMJEE SINGH YADAV IFS

CONSERVATOR OF FOREST
WORKING PLAN CHANDRAPUR-2

GOVERNMENT OF MAHARASHTRA

WORKING PLAN

FOR

SIRONCHA FOREST DIVISION

AT

ALLAPALLI

SOUTH CHANDRAPUR FOREST CIRCLE,
CHANDRAPUR

FOR THE PERIOD 2005-06 t0 2014-15

VOLUME-I

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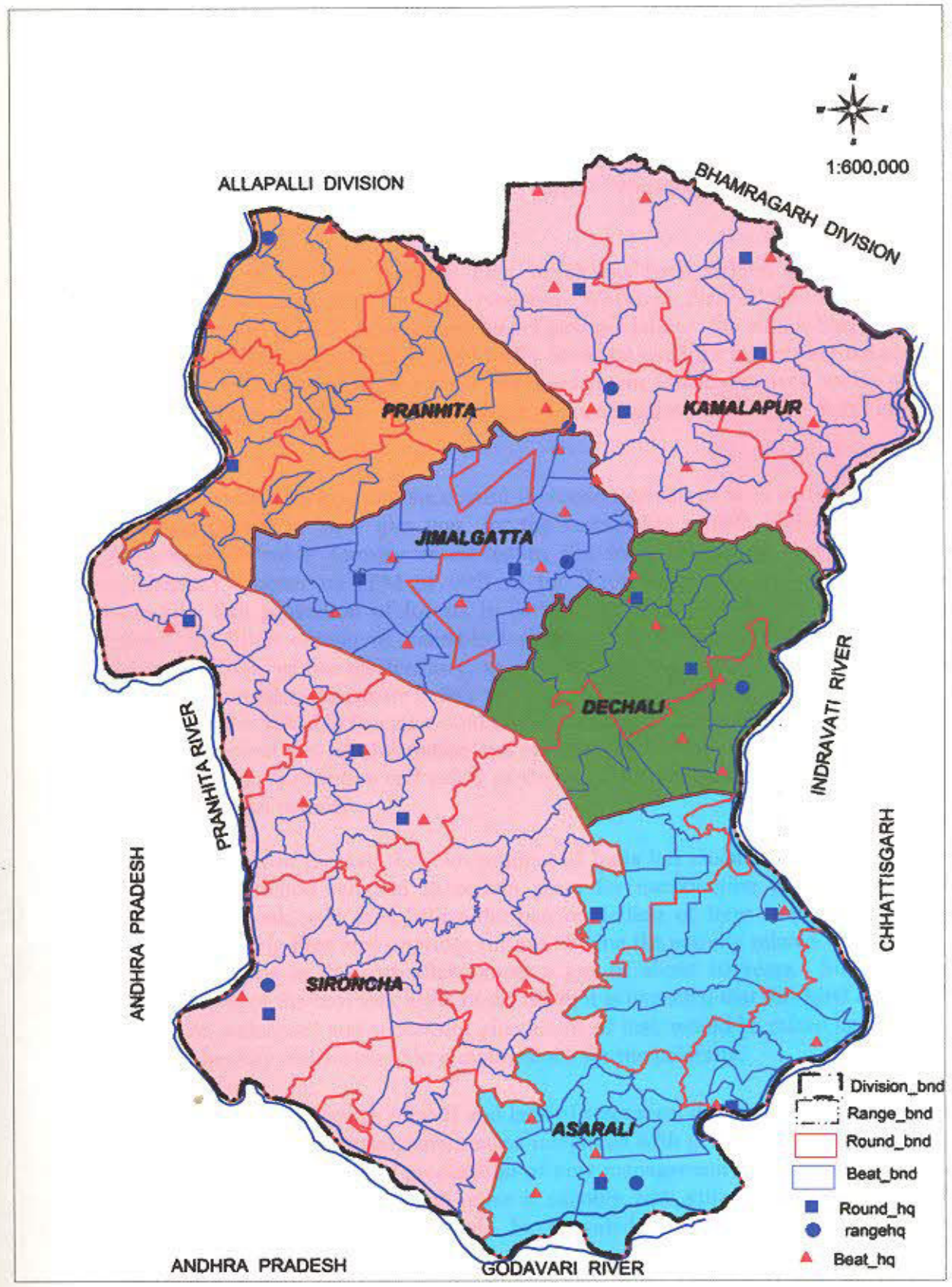

Forward

The present Working Plan for Sironcha Forest Division for the period 2005-06 to 2014-15 written by Mr.Ramjee Singh Yadav, IFS, Conservator of Forests on the basis of preliminary working plan report written by Dr.S.S.Srivastava, IFS, Dy. Conservator of Forests replaces the earlier Working Plan authored by Shri A.P.Deshmukh.

This is the first Working Plan which has been written after the issue of detailed guidelines through the National Working Plan Code formulated by GOI. Accordingly as per new guidelines, the author Shri Yadav has added 4 mandatory chapters which vividly focus on need for integrating the concepts like JFM with general approach for management in forestry as well as lay suitable emphasis on propagation, management and conservation of Wildlife & NTFP in the area.

Needless to say, that, successful protection measures with active involvement of local people is '*Sine quo non'* for the sustainable growth and maintenance of extremely valuable forestry resources in the tract. Keeping this in view, the mandatory chapters on JFM as well as for 'Protection' lay suitable emphasis on ensuring that protection of forests in carried out effectively in view of increasing threat for illicit cutting of valuable teak trees and threat to staff from antisocial elements from within the territory, as well as, across he border. Unless effective measures are taken to ensure safety to staff, prescriptions given in the 'Plan' for the growth of the valuable forests would not materialise in real sense, and, therefore, it is strongly desired that administration and management in the area be geared up well to take care of the protection and safety of the departmental staff as well as the forest as a matter of first priority.

In view of the fact that GOI has recently been considerate in allowing overwood removal in certain areas for encouraging growth of valuable species like teak, and thus lifting the ban on felling of trees imposed earlier, the present Working Plan also provides for introducing the activity related with raising of teak plantations in the area after almost a gap of about 10 years. Since the tract includes one of the best teak areas in the State, it is expected that this kind of initiative would be welcomed and successful plantations of teak would be raised and protected to build healthy and sustainable growing stock for the posterity.

Despite constraints of staff and lack of resources, the maps of entire area have been digitized and SOI management maps integrated with geo referenced village maps. Whereas this has facilitated preparation of new management maps which contain all important features of forests and relate it suitably with village locations and related attributes. The digitized maps would be provided to Dy.Conservator of Forests concerned through CDs which would enable them to conveniently print and use of distribute maps on any scale as per need. The range, round and beat maps can be printed in colour with details and crop compositions and other features. The Geo-media viewer is being provided to the Dy.Conservator of Forests free of cost that can be useful for conveniently studying, monitoring and printing of maps as a whole or in part. Further extensions in applications of GIS in the Department may provide opportunities for monitoring the trends of changes or growth in crop stocks in times to come through

extensive use of GPS and satellite imageries of higher resolutions. I expect that the officers in charge of divisions and ranges would benefit immensely if they proceed to use the technology even for printing of treatment maps and estimation.

The provisions made under important miscellaneous regulations as well as the main chapters on Forest Protection, Wildlife, NTFP and SCI should be followed scrupulously to ensure success of the present plan endeavours. Mr Yadav and his entire team have done very hard work and make special efforts to bring out this plan in the present form and I wish to thank them for their commendable work on this count.

Ramanuj Choudhary, IFS
Chief Conservator of Forests
Working Plan Circle, Nagpur

INTRODUCTION

Sironcha Forest Division at Allapalli was created vide Government of Maharashtra Resolution No. FDM/1880/1/F2 dated August 29, 1983. Sironcha Forest Division at Allapalli comprises of areas spread over six territorial forest ranges viz. Sironcha, Asarali, Dechali, Jimalgatta, Pranhita and Kamalapur. The total forest area of this division is 2777.85 square kilometer of which 2654.89 square kilometer is reserved forest and 122.96 square kilometer is protected forest. Out of total forest area 132.42 square kilometer of reserved forest and 29.80 sq km of protected forest that is 161.22 sq km has been allotted to Forest Development Corporation of Maharshtra Limited (an Undertaking of Maharashtra State). The present working plan for Sironcha Forest Division at Allapalli replaces the earlier working plan of Shri A.P.Deshmukh (1991-92 to 2000-2001) for Sironcha Forest Division.

The preliminary working plan for Sironcha Forest Division prepared by Dr S S Shrivastava IFS, then Deputy Conservator of Forest, Working Plan division, Chandrapur-2 had been discussed by State Level Committee on 12th September, 2002 and sanctioned with some modifications.

Draft working plan report has been written by Shri Ramjee Singh Yadav, IFS Conservator of Forests, Working Plan Chandrapur-2.

Salient features of preliminary working plan report are:

(1) **Area reconciliation**: First author pointed out a discrepancy in the area of 1067ha in previous working plan (1991-92 to 2000-01) written by Shri A.P. Deshmukh and the proposed present plan. Shri Deshmukh`s plan dealt with the forest area of 232,134.802 ha. Present plan deals the forest area 212,498.579 ha. 16,122.186 area is with FDCM for management. 723.736 ha is river bed declared as reserved forest but not included in any compartment. 48,440.679 ha area is as difference in planimetted and notified area. Total 49,164.415 ha area is under miscellaneous area. Total forest area with division is 277,786.160 ha as per the various notifications and entries in Form No I..

(2) Preliminary plan report prescribed for following working circles:

(a) Selection cum Improvement Working Circle.
(b) Improvement Working Circle.
(c) Teak Plantation Working Circle.
(d) Old Teak Plantation Working Circle.
(e) Protection Working Circle.
(f) Bamboo(overlapping) Working Circle.
(g) Non Wood Forest Produce (overlapping) Working Circle.
(h) Wildlife (Overlapping) Working Circle.

Committee had decided to write one Working Circle for Teak Plantation Working Circle including old teak plantations and plantation to be taken together. Present working plan thus prescribes the following working circles in which mandatory chapters on Joint Forest Management, Ecotourism and Forest Protection as per National Working Plan Code and as suggested by the Additional Principal Chief Conservator of Forests (Production and

Management) and the Chief Conservator of Forests, Working Plan Nagpur during various stages of discussions with present author.

(1) Selection cum Improvement Working Circle.
(2) Improvement Working Circle.
(3) Teak plantation Working Circle.
(4) Protection Working Circle.
(5) Bamboo(Overlapping) Working Circle.
(6) Non wood forest produce (Overlapping) Working Circle.
(7) Wildlife (Overlapping) Working Circle.
(8) Joint Forest Management.
(9) Ecotourism and
(10) Forest Protection (Overlapping) Working Circle.

The Sironcha Forests contains basically Teak and Teak-Miscellaneous Forest with large number of associate tree species. Miscellaneous species is represented by Anjanwak i.e. *Hardwickia binnata*. The All India Teak Site Quality varies from I to IV and major of areas conform to III. Except near villages, the natural regeneration is satisfactory in most of the areas. The biotic pressure is more near the thickly populated areas and villages.

The tree enumeration of the forests has been done by the Survey of Forest Resources Chandrapur-2 under Deputy Conservator of Forests Working Plan Chandrapur-2. Also stockmapping had been carried out by the staff of this Division. Analysis of satellite data for the tract has been used for density classification and stocking. Based on the site quality and composition of the crop, the forests of this division have been prescribed to be managed under the working circles as stated earlier.

It would be worthwhile to mention here that in the earlier Working Plan of Shri A.P.Deshmukh for Sironcha Forest Division, the Teak Conversion Working Circle was discontinued due to restriction on clear felling by the Government of India. Recently, however, the Government of India has permitted the overwood removal for Teak Plantations for some Working Plans. The Teak Plantation Working Circle has been prescribed in this working plan for the areas which are suitable for concentrated teak regeneration.

Author are extremely grateful to Shri J.N.Saxena, IFS, Principal Chief Conservator of Forests and Managing Director FDCM Ltd M.S. Nagpur, Shri Jwala Prasad IFS, Additional Principal Chief Conservator of Forests (Production and Management) M.S. and Shri Ramanuj Choudhary IFS, Chief Conservator of Forests, Working Plan Nagpur and Shri Shailendra Bahadur IFS, CCF then Conservator of Forests Nagpur for their kind inspiration and valuable guidance in the preparation and revision of Working Plan for Sironcha Forest Division from time to time with various capacities. Author is also thankful to Shri V.T.Patki, IFS (retired), then Conservator of Forests, South Chandrapur Circle, Chandrpur, Shri B.S.K.Reddy IFS, present Conservator of Forests, South Chandrapur Circle, Chandrpur and Shri Yashvir Singh, I.F.S. then Deputy Conservator of Forests, Sironcha Forest Division, Allapalli who had been kind enough to extend their cooperations and valuable helps for the preparation of this Working Plan for Sironcha Forest Division.

Author is thankful to Shri A. K. Jugade ACF, Shri M. K. Sabbir RFO, Shri M. B. Jawade RFO of Working Plan Division, Chandrapur –2 for their services rendered in this regard. Author is thankful to the staff of Working Plan Chandrapur-2 S/Shri B.E.Nandanwar, Ranger Surveyor, Shri S.B.Waghmare, Shri Nanore, Shri Satai, Shri Badawe, Shri Landge, Surveyors, and Shri R.G.Muraskar, Steno-typist who have put in their dedicated and sincere efforts in the preparation of this plan for Sironcha Forest Division.

Chandrapur.
Dated 5th February, 2005.

Ramjee Singh Yadav, IFS
Conservator of Forests,
Working Plan Division,
Chandrapur- II.

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EXECUTIVE SUMMARY OF THE WORKING PLAN FOR THE SIRONCHA FOREST DIVISION

Working Plan for Sironcha Forest Division covers Reserved and Protected Forest areas admeasuring 212,492.479 ha in charge of forest department located in the Gadchiroli District and within the civil territories of Aheri (Part) and Sironcha Tahsils. Boundaries are as follows:

North:- Allapalli and Bhamaragad Forest Division.
East :- Indravati river along the Chhattisgarh State.
South :- Godavari river along Andhra Pradesh State.
West:- Pranhita river along Andhra Pradesh State.

It lies between latitudes 18º41'15" North to 19º 20' North and longitudes 79º55'19" East to 80º22'30" East. Average elevation above MSL is 130 m. Highest point in the tract is near Rompalli at an elevation of 660 m above MSL.

Geology is divided into Recent, Upper Gondwana, Lower Gondwana, Upper Cuddapah and Archaeans. Rocks are sandstone, shale, gneiss, granite schist and soil is alluvium, Laterite, sandy loam and clayey loam. No major minerals are found. Fossils are found along Pranhita River near Tekada in Sironcha Tahsil.

The weather remains hot and dry for the major part of the year. The mean maximum temperature is 48.1º C and the mean minimum temperature is about 8.9º C during winter. The average rainfall over the areas is about 1923 mm.

The forests are of the "Southern Tropical Dry Deciduous Forest" and "Southern Moist Deciduous Forests" categories. Commonly found important species are *teak, ain, anjanwak, bija, hirdra, beheda, semal, haldu, dhaoda, bhirra, tendu, salai, mowai ,lendia ,garari, khair* etc. Bamboos mainly *Karaka* and *Katang* are found in large tract.

Fire causes considerable damages to establishment of young recruits near human habitation. **Grazing** in the forests mainly surrounding villages has caused severe impact in regeneration of forests by grazing and trampling of young seedlings. O**rganized illicit felling** of trees and bamboo and **encroachment** upon forest land are of major concern as Naxalites are covering the activities. **Drought, frost, insects, pests and parasites** have little impact on the health of forests.

Large number of wild animals are found in the tract. Tiger, leopard, wild dogs, fox, hyena, cats, wolf, jackal etc are main carnivore. Cheetal, nilgai, sambar, sloth bear, wild boar, barking deer, chausingha, black buck, **wild buffalo**, bison, common langur, rhesus macaque, hare etc are found. Wild buffalo is found only in this tract in Maharashtra. Porcupine, mongoose, rats, mice, flying squirrel, giant squirrel, mouse deer etc are rodents. Crocodiles, pythons, cobra, krait, viper, rat snakes, common lizard, monitor lizard, ghorpad, chameleons etc are reptiles prominently found. Almost all common birds are found. Besides, these, Great Indian Hornbill, cranes, teals, pigeon, mor, jungle fowl, titar, bater, hawk, vultures etc are found.

Total **human population as per 1991** census is 101,000. Out of the total population Scheduled Tribes comprise 36% and Scheduled Castes 20%.

Cattle population as per 1992 estimation is 266000 cattle unit. **Carrying capacity** of the forests of Sironcha is 268000 cattle units.

FDCM Ltd, an undertaking of Maharashtra Government is presently working on 16,122.186 ha of forest land since 1974. It is engaged in developing low value forests in high value forests. FDCM has developed successful valuable forests mainly of teak during that period. Thus it has distinct role in development of forests.

Component of **five year plans** for development of forests in the tract were very low, hence no impact of five year plans are visible.

Labour supply for forestry works is mainly through local population.

Sironcha, Jimalgatta and Korepalli forest blocks were declared reserved forests as per Indian Forest Act, 1878 from 1879 to 1924 and finally 1942 under IFA, 1927. Ex-jamindaries forest were declared protected forests in 1955. Most of protected forests were declared as reserved forests in 1992.

Working Plans for Reserved Forests:

Shri J Carr prepared the first Working Plan in the year 1917-18. The forests were divided into three main types: (i) Mixed and Teak Forests, (ii) Anjan Forests and (iii) Low Mixed Forests. Forests were worked as per requirement of Crown.

Shri M.T.Hussain's Plan (1927-38 to 1953-54): The plan constituted four working circle viz. (i) The Conversion working Circle,(ii) The improvement working circle, (iii) The Miscellaneous working Circle, and (iv) The bamboo overlapping Working Circle.

(1) Conversion Working Circle: Conversion period = 80 years to achieve 105 cm gbh with four PBs.

(2) Improvement Working Circle: Selection girth: 135cm for site quality II and 120 cm for III and 75 cm for IV.

(2) Bamboo (overlapping) Working Circle**:** 4 years felling cycle.

Dashputre's Plan (1954-55 to 1968-69): The following working circles were formed

(i) The Conversion Working circle: 10, 601.6 ha: Conversion period 120 years.

(ii) The Selection-Cum-Improvement WC: 35,350.8 ha: selection girth 150cm for II,
120 cm for III

(iii) The coppice with Reserved WC 3, 005.2 ha

(iv) The Miscellaneous Working Circle 31, 061.2 ha

(v) The Bamboo (Overlapping) WC 24, 426.0 ha

(vi) The Semal (Overlapping) WC 17, 817.6 ha

Joshi's Plan 1974-75 to 1983-84 This was a revision of Dashputre's Plan by Shri R B Joshi. The following working circles were formed

(i) Protection Working Circle 13,377.96 ha

(ii) Conversion Working Circle 17,446.59 ha

(iii) Selection Cum Improvement Working Circle 52,640.59 ha.

(iv) Coppice With Reserve Working Circle 5,637.60 ha.

(v) Miscellaneous Working Circle 19,565.55 ha.
(vi) Bamboo (Overlapping) Working Circle 33,329.785 ha.
(vii) Khair (Overlapping) Working Circle 14,037.71 ha.
(viii) Semal (Overlapping) Working Circle 25,936.79 ha.

Working Schemes for Protected Forests:

Shri P.P.Joshi prepared Working Scheme for 75,590 acre of Protected Forests of Dechali range for period from 1960-61. Three felling series namely Tonder, Kolamarka and Dechali were carved. Felling cycle was fixed at 30 years and selection girth as 4′ for group II trees and 5′ for group I trees.

Shri B.P.Desai prepared Working Scheme for the period 1966-67 to 1975-76 for the forests as given below:

(1) Selection Cum Improvement Working Circle 24435.28 ha.

Rotation period 120 years, Felling Cycle 20 years, Selection Girth 150 cm for group I, 120 cm for group II, 90 cm for group III and 45 cm for garari.

(2) Minor Forest Working Circle 2430.94 ha.
(3) Khair (Overlapping) Working Circle 3649.86 ha.
(4) Bamboo (Overlapping) Working Circle 22137.92 ha.

Exproprietary Forests of Sironcha and Asarali Ranges

The 1965-66 to 1974-75 Scheme of Shri R L Choudhary: These forests covered 51 villages and an area of 3450 hectare. The prescriptions laid down by Shri Choudhary constituted only one working circle i.e. coppice with reserve system with rotation period at 20 years to meet the requirements of local people**.**

Ex-Aheri Jamindari Forests of Umanoor and Edranga blocks : Shri S C Agrawal`s Scheme for period1956-57 to 1975-76: Shri S C Agrawal prepared a Working Scheme for the part of Ex-Aheri Jamindari Forests of the South and East Chanda Division for a period from 1956-57 to 1975-76. The area covered under this tract comprised of Umanoor block and Edranga block of Repanpalli (Present Jimalgatta Range) range. Silvicultural system adopted was selection cum improvement system with 20 year of felling cycle and selection girth as 4′ except that of garari for which it was 1′ 6″. 50% of available trees were prescribed for felling.

Ex-proprietory Forests of Kamalapur, Pranhita, Dechali and Jimalgatta Ranges

Shri M B Mankare`s Scheme for period 1970-71 to 1979-80: Shri M B Mankare prepared scheme for the area 73,315.4 ha of the tract in Kamalapur, Pranhita, Dechali and Jimalgatta ranges.

(1)Protection Working Circle 969.63 ha.
(2) Selection cum Improvement Working Circle 56,337.47 ha.

Felling Cycle 20 year, selection girth at 135 cm, 120 cm, 90 cm and 45 cm for group I, II, III and garari respectively with removal of 1 out of 3 available trees.

(3) Teak Plantation Working Circle 4,696.38 ha.
(4) Minor Forest Working Circle 11,311.94 ha.
(5) Khair (Overlapping) Working Circle 5,751.81 ha.

(6) Bamboo (Overlapping) Working Circle 1,909.91 ha.

SIRONCHA FOREST DIVISION: CONSOLIDATED WORKING PLAN: SHRI A. P. DESHMUKH'S WORKING PLAN (1991-92 to 2000-2001)

A.P. Deshmukh prepared consolidated working plan for forest area under forest department:

(i) Protection Working Circle 14,348.340 ha.
(ii) Selection cum Improvement Working Circle 137,582.814 ha.
Felling cycle 20 years, selection girths 120cm, 105cm, 90cm and 45cm for group A, B, C and D respectively.
(iii) Improvement Working Circle 51,492.344 ha.
(iv) Miscellaneous Working Circle 28,711.304 ha.
(v) Wildlife (Overlapping) Working Circle Entire tract.
(vi) Bamboo (Overlapping) Working Circle 55,256.459 ha
(vii) Minor Forest (Overlapping) Working Circle Entire tract.

RESULTS OF PAST WORKING:

In **Protection Working Circle** area received rest as no fellings were carried but illicit fellings in large scale in some patches are noticed.

In **Improvement Working Circle** the prescription of removal of dead dying tress were seldom carried out. But the rest given to the crop is excellent.

In **Bamboo(overlapping) Working Circle** the prescriptions of working plan were followed up in part as the felling of bamboo used to be interrupted by Naxalites from time to time. Hence the crop remained untreated partially. Even Ballarpur Paper Mill withdrew its working from the tract due to anti social activities of people with following of naxalites.The remaining crop is of congested clumps and needs regular removal of culms.

In **Wildlife (Overlapping) Working Circle**, nothing specific regarding wildlife management had been carried out. The result of that is the number of wildlife species is on decline.

In **Minor Forest Produce (overlapping) Working Circle** no specific management was done except the removal of minor forest produce by forest dwellers and disposing them through **Tribal Development Corporation (TDC)**. No processing or value added works were carried out to enhance the income of the people. The tract is rich in non wood forest produces and that is to be harnessed to optimum extent without hampering the biodiversity and sustainability.

In **Miscellaneous Working Circle** no prescription was given for working.

Stem analysis of teak was carried out for **site quality I, II, III, IV**. Results have been compiled. **1% sampling enumeration** has carried out by SOFR unit Chandrapur during 2002-03. **Stock mapping** of the tract have been carried out during 2004-05 by Working Plan Chandrapur_2 unit. Stocking has been ascertained with the help of satellite data at Geomatics Centre Nagpur. Old **yield table and form factors** developed on the basis of actual working in the past are to be used in future plan period.

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

National Forest Policies for India were enunciated in the years 1894, 1952 and 1988. The changes in the policy were brought about according to prevailing national needs and public requirements both local and general. National Wildlife Action Plan, National Forestry Action Programmes, etc have been discussed in brief.

SPECIAL OBJECTS OF MANAGEMENT :

(1) To preserve and enrich the growing stock in natural forests and to restock all under-stocked and degraded areas of the forests with the help of soil and moisture conservation measures, reforestation and regulation of grazing.
(2) Preservation and improvement of minor forest to obtain progressively increasing yield of small timber, fire wood, and poles in order to meet the demands of local people and to provide grazing area to local cattle.
(3) To combat ill effects of soil erosion wherever it has already started and to prescribe preventive measures.
(4) To increase the production of non-timber forest produce and to manage the same scientifically.
(5) To increase the productivity and ensure progressively increasing yield of forest produce in demand.
(6) To achieve compatible wildlife management with emphasis on rare, endangered and endemic species like tigers, panthers, wild buffalos, four horned antelopes, sloth bears, wild dogs and sambhars.

Based on the objectives of the management and the methods of treatment, the following working circles have been carved out:

Sr. No	**Working Circles**	**A.P.Deshmukh Plan (area in ha)**	**Present Plan (area in ha)**	**Remarks**
1	Selection Cum Improvement Working Circle	137,582.814	132,070.021	- 5,512.793
2	Improvement Working Circle	51,492.344	56,086.858	+ 4,594.514
3	Protection Working Circle	14,348.340	14,152.120	- 196.220
4	Teak Plantation Working Circle		10,189.412	+ 10,189.412
5	Bamboo (Overlapping) Working Circle	55,256.459	55,781.939	+ 535.480
6	Non Timber Forest Produce			Overlapping
7	Miscellaneous Working Circle	28,711.304	---------	- 28,711.304
8	Wildlife (Overlapping) Working Circle	Entire tract	Entire tract	Overlapping

9	Joint Forest Management		Overlapping	
10	Forest Protection		Entire tract	
11	Ecotourism		Entire tract	
12	FDCM Ltd	In Miscellaneous Working Circle		+16,122.186
13	Working Plan Area	232,134.802	212,498.579	-20,636.223

* Miscellaneous area consists of 49,164.415 ha out of which 723.736 ha is river bed declared reserved forests and not included in any working circle and 48,440.679 ha is as difference in planimetted and notified area.

PERIOD OF THE PLAN: The period of the plan is fixed for 10 years from 2005-2006 to 2014-15. Mid term review of the plan may be taken up during 2010-11, if the prescriptions are found not conducive to the fulfillment of objectives.

Selection Cum Improvement Working Circle:

Area- 132,085.505 ; Felling Cycle 20 years; Stem analysis result is as follows:

Site Quality	Age in year	Girth (OB) in cm	Harvestable Girth in cm
I	108	240	240.
II	103	190	195
III	94	127	135.
IV	84	105	105.

Harvestable girths are as follows:

Species/Group	SQ_1	SQ_2	SQ_3	SQ_4
Teak	240cm	195cm	135cm	105cm
Group A	240cm	195cm	135cm	105cm
Group B	240cm	195cm	135cm	105cm

Group C : Lendia and Khair : 75cm

Group D : Garari : 45 cm.

Where:

Group A consists of Ain, Bija, Haldu, Kalamb, Shisham, Tiwas.

Group B consists of Dhaoda, Salai, Mowai and other species not specified as Teak, Group A, Group C or Group D.

Group C consists of Lendia and Khair and

Group D consists of Garari.

No of felling series 56 full + 5 Part = 61.

YIELD DETERMINATION IN SCI WC RESPECTIVE GROUPS OF SPECIES

GROUPS	% removal of available trees	No of trees/ha to be removed in the felling cycle from each coupe	In terms of number out of available selection trees
A+Teak	36%	6.02	4 out of 10
B	36%	8.14	4 out of 10
C	39%	2.74	4 out of 10

D	40%	13.93	4 out of 10

Average area in SCIWC for working per year = 6604 ha
Assuming 50% area is having density > 0.4, area available will be = 3300 ha (say)

GROUPS	No of trees/ha	Harvestable girth in cm	Form Factor for timber	Volume in m^3	Timber in m^3	Fuel beats
A+Teak	6.02	135	0.660	13100	13100	3900
B	8.14	135	0.660	17700	17700	5300
C	2.74	75	0.200	1808		2200
D	13.93	45	0.075	3500		1800
Total	30.83			43800	30800	13200

Where,
Group A + teak 30% of volume of timber, taken as fuel beat.
Group B 30% of volume of timber is taken as fuel beat.
Group C 100% of total volume is taken as fuel beat.
Group D 100% of total volume is taken as fuel beat.
Round off figures have been taken.

Mode of Regeneration – Natural.

Treatment prescribed:
Coupe will be demarcated one year before main felling except first coupe which will be demarcated and felled to stream line the working sequence. Treatment map will be prepared identifying the coupe area in following categories:
Type A: Protection area having steep slope more than 25 degree, sacred grove, riparian zone.
Type B: Buffer area 20 meter around the water bodies, 20 meter along the road side, under stocked area with density less than 0.4, erodable area, natural blanks.
Type C: Pole crop of (a) Natural growth and (b) Plantation area and
Type D: Well stocked area having density more than 0.4.
Works to be carried out: Water and soil conservation measures to be taken in entire area as per requirement and model sanctioned by competent authority. For felling following prescriptions are given:
Type A: No felling.
Type B: In under stocked area only improvement felling in the form of removal of dead, dying and malformed species. With artificial regeneration improvement in the stocking will be carried out.
Type C: In (a) category area thinning will be carried out to bring the spacing to one third of height of the pole and in (b) area thinning will be carried out as per the prescription given Teak Plantation Working Circle.

Type D: In this category main selection and improvement felling will be carried out. First the site quality will be determined. As per the site quality, enumeration of approach class and above selection girth class will be carried out. Out of silviculturally available 100 tree for selection 86 trees will be marked for felling leaving fruit bearing, medicinally valuable trees and unknown trees not to be felled. Selection will be from higher girth class to lower girth class. For improvement felling irrespective of girth classes, all dead, dying and malformed trees will be marked for felling. Subsidiary cultural operations will be carried out in subsequent year and cleaning in fifth year. Regeneration will be from natural regeneration. Strict protection from fire and grazing will be ensured to have natural regeneration established.

Improvement Working Circle –

Area 56,086.858 ha.
Mostly near villages. Degraded or under stocked.
To give rest and improve it through improvement and artificial regeneration.
No yield calculation.
Felling Cycle 20 years. 26 Felling Series each with 20 coupes.
Treatment : Coupes will be demarcated and classified in four categories: Types A, B, C and D as in SCIWC and prescription for working as the same except in Type D where only improvement felling will be done.

Protection Working Circle

Area 14,152,120 ha.
Steep slope and prime forest—No working and only protection to the area and vegetation.

Teak Plantation Working Circle-

Area 10,189.562 ha including old teak plantation of 6,235.952 ha and overwood removal of 3,953.610 ha.
Area for overwood removal is approximately 4000ha.
Yearly teak plantation is to be the extent of 250 ha.
Yield 250ha* 80 cubic meter/ha = 20,000 cubic meter out of which 50% i.e. 10,000 cmt timber and rest 10,000 fuel beat.
Thinning of approximately 600 ha/year, yield will be mainly in form of pole approximately 30,000..
In overwood removal area regeneration will be achieved through artificial plantation. In thinning area no regeneration will be taken.
Bamboo Overlapping Working Circle
Area – 31,745.357 ha out of 55,781.939 ha area.
Cutting cycle 3 years.

Felling series 17. Bamboo yield approximately 300,000 long bamboo.
Mandatory chapters : On Wildlife Protection, Joint Forest Management, Ecotourism, NTFP and Forest Protection chapters have been written.
Wild buffalo is found in the tract which is unique in Maharashtra.
Tiger and *Panther* are also found.
Financial forecast reveals revenue exceeds expenditure, revenue in rupees 4,250 lakh annual with respect to expenditure 1,041 lakh on average.

HIGHLIGHT OF THE PLAN: Tract is vulnerable for organised illicit felling of valuable trees and bamboo on Maharashtra, Andhra Pradesh border under the cover of anti social elements mainly Naxalites. Forest personnel are being assaulted and Government properties being burnt and common resources are not being harvested by legal means by Government machinery. They are not allowing the normal working of forestry.

CONCLUSION:- *Working Plan prescriptions are excellent if implemented. But that will be materialise in course of time is to be watched. Otherwise forest of Sironcha is going to be ruined in no time to come.*

SrNo	ABBREVIATIONS	
1	MSL	Above Mean Sea Level.
2	ACF	Assistant Conservator of Forests.
3	BH	Breast Height.
4	CAI	Current Annual Increment.
5	Cft	Cubic feet.
6	cm	Centimeter.
7	Cm^3	Cubic centimeter.
8	Comptt	Compartment.
9	DBH(OB)	Diameter at Breast Height (Over Bark)
10	DyCF	Deputy Conservator of Forests.
11	Dn	Division.
12	FDCM Ltd	Forest Development Corporation of Maharashtra Limited.
13	FLCS	Forest Labourers Cooperative Society.
14	FRH	Forest Rest House.
15	FS	Felling Series.
16	FSO	Forest Settlement Officer.
17	FV	Forest Village.
18	FYM	Farm Yard Manure.
19	FYO	First Year Operation.
20	GBH	Girth at Breast Height.
21	GBH(OB)	Girth at Breast Height (Over Bark).
22	GBH(UB)	Girth at Breast Height (Under Bark).
23	ha	Hectare.
24	IGF	Inspector General of Forests.
25	IFA	Indian Forest Act.
26	Km	Kilometer.
27	kg	Kilogram.
28	M	Meter.
29	mm	Milimeter.
30	m^3	Cubic meter
31	MAI	Mean Annual Increment.
32	MVSS	Maharashtra Van Sanshodhan Sansthan.
33	PB	Periodic Block.
34	PPO/ PYO	Pre Planting Year Operation.
35	PWD	Public Works Department.
36	RF	Reserved Forests
37	RFO	Range Forest Officer.
38	Rs	Rupees.
39	SCI	Selection Cum Improvement.
40	sq	Square.
41	sqkm	Square kilometer.

42	Spp	Species.
43	SRP	State Reserve Police.
44	SYO	Second Year Operation.
45	SrNo	Serial Number.
46	TYO	Third Year operation.
47	WC	Working Circle
48	WS	Working Series.
49	IVth YO	Fourth Year Operation.
50	Vth YO	Fifth Year Operation.

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LOCAL AND BOTANICAL NAMES OF PLANTS OCCURING IN SIRONCHA FOREST DIVISION

A: TREES:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Achar/ Char/Charoli	*Buchanania lanzan*	Anacardiaceae
2	Amaltas/Bahava	*Cassia fistula*,Linn	Caesalpiniaceae
3	Amta	*Bauhinia malabarica*,Roxb	Caesalpiniaceae
4	Anjan	*Hardwickia binata*,Roxb	Caesalpiniaceae
5	Apta	*Bauhinia racemosa*,Lamk	Caesalpiniaceae
6	Aonla	*Emblica officinalis*	Euphorbiaceae
7	Arjun	*Terminalia arjuna*	Combretaceae
8	Babul	*Acacia nilotica Linn*	Mimosaceae
9	Bud/Wad	*Ficus bengalensis,Linn*	Moraceae
10	Beheda	*Terminalia bellirica,Gaertn*	Combretaceae
11	Bel	*Aegle marmelos(L)*	Rutaceae
12	Bhirra	*Chloroxylon swietenia*	Rutaceae
13	Biba/Bhilwa	*Semecarpus anacardium,Linn*	Anacardiaceae
14	Bija	*Pterocarpus marsupium,Roxb*	Fabaceae
15	Bistendu	*Diospyros montana, Roxb*	Ebenaceae
16	Bor/Ber	*Zizyphus mauritiana,Lamk*	Rhamnaceae
17	Chichwa	*Albizia odoratissima,Roxb*	Fabaceae
18	Dhaman	*Grewia tilifolia(vahl)*	Tiliaceae
19	Dhaoda	*Anogeissus latifolia*	Combretaceae
20	Dhoban/Satpuda	*Dalbergia peniculata, Roxb*	Fabaceae
21	Dikamali	*Gardenia resinifera, Roth*	Rubiaceae
22	Garari	*Cleistanathus collinus,Roxb*	Euphorbiaceae
23	Ghogar/Papda	*Gardenia latifolia Ait*	Rubiaceae
24	Ghoti/Ghot	*Zizyphus glaberrima(Sedgw)*	Rhamnceae
25	Gongal	*Cochlospermum religiosum Linn*	Cachlospermaceae
26	Haldu	*Adina cordifolia*	Rubiaceae
27	Hingan	*Balanites aegyptica (L)Del*	Balanitaceae
28	Hiwar	*Acacia leucophloea Roxb Willd*	Mimosaceae
29	Hirda/Harra	*Terminalia chebula*	Combretaceae
30	Imli/Chinch	*Tamarind indica*	Caesalpiniaceae
31	Jambhul/Jamun	*Syzigium cumini Linn*	Myrtaceae
32	Kakad	*Garuga pinnata Roxb*	Burseraceae
33	Kala-umber	*Ficus hispida*	Moraceae
34	Kakai	*Flacourtia indica (Burmf)Mer*	Flacourtiaceae
35	Kamala	*Mallotus philippensis*	Euphorbiaceae

36	Karai	*Miliusa velutina HF& Thoms*	Anonaceae
37	Kalamb	*Mitragyna parviflora Roxb*	Rubiaceae
38	Karanj	*Pongamia pinnata(L)pierre*	Fabaceae
39	Kateyen/Kasai	*Bridelia retusa spreng*	Euphorbiaceae
40	Kawith	*Limonia acidissima Lorr*	Rutaceae
41	Khair	*Acacia catechu willd*	Mimosaceae
42	Khirni	*Manilcora hexandra Roxb*	Sapotaceae
43	Kullu	*Sterculia urens Roxb*	Sterculiaceae
44	Kumbhi	*Careya arborea Roxb*	Lecythidaceae
45	Kusum	*Schleichera oleosa Lour Merr*	Sapotaceae
46	Lasora/Bhokar	*Cordia dichotoma Forstf*	Boraginaceae
47	Lendia/sehna	*Lagerstroemia parviflora Roxb*	Lythraceau
48	Lokhandi	*Lxora arborea Roxb*	Rubiaceae
49	Mango/Aam	*Mangifera indica*	Anacardiaceae
50	Maida-Lakri	*Litsea glutinosa*	Lauraceae
51	Medshing	*Dolichandrone falcata Seem*	Bignoniaceae
52	Moha/Mahuwa	*Madhuca longifolia Koen*	Sapotaceae
53	Mokha	*Schrebera swietenoides Roxb*	Aristolochiaceae
54	Moyen/mowai	*Lannea coromandelica Hoult*	Anacardiaceae
55	Neem	*Azadirachta indica AJuss*	Meliaceae
56	Padar	*Stereospermum suaveolens DC*	Bignoniaceae
57	Pair	*Ficus rumphii*	Moraceae
58	Palas	*Butea monosperma Lamk Taub*	Fabaceae
59	Pangara	*Erythrina variegata Linn*	Fabaceae
60	Pipal	*Ficus religiosa*	Moraceae
61	Papra	*Holoptelea integrifolia*	Urticaceae
62	Rankela	*Dillenia pentagyna*	Magnoliaceae
63	Rohan	*Soymida febrifuga(AJuss*	Meliaceae
64	Sagwan/Sag/Sagaun	*Tectona grandis Linn*	Verbenceae
65	Saja/ain	*Terminalia alata Heyne*	Combretaceae
66	Salai	*Boswellia serrata Roxb*	Burseraceae
67	Semal	*Bombax ceiba L*	Malvaceae
68	Shisham	*Dalbergia latifolia Roxb*	Fabaceae
69	Shivan	*Gmelina arborea Linn*	Verbenaceae
70	Siras-black	*Albizia lebbek Lwilld*	Mimosaceae
71	Siras-white	*Albizia procera Roxb*	Mimosaceae
72	Sitaphal	*Annona squamosa L*	Annonaceae
73	Suriya	*Xylia xylocarpa Roxb*	Annonaceae
74	Tendu	*Diospyros melanoxylon Roxb*	Ebenaceae
75	Tiwas/Tinsa	*Ougenia oojeinensis Roxb*	Fabaceae
76	Umbar/Gular	*Ficus recemosa Linn*	Moreaceae
77	Warang/Baranga	*Kydia calycina Roxb*	Malvaceae

B: SHRUBS AND HERBS:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Aal	*Moringa citrifolia(Lin)*	Celeastraceae
2	Aghada	*Achyranthus aspera(Linn)*	Amarantaceae
3	Akola	*Alangium salvifolium(Thwaites)*	Cornaceae
4	Ban rahar	*Flemingia semialata(Roxb)*	Fabaceae
5	Baibirang	*Embelia ribes*	Myrsinaceae
6	Bankapas/Rankapas	*Thespesia lamps*	Malvaceae
7	Bharati	*Maytenus emarginata(Benth)*	Celastraceae
8	Chind/Sindhi	*Phoenix sylvestris Roxb*	Palmae
9	Chipti	*Desmodium pulchellum Benth*	Fabaceae
10	Dhawai/Jilbili	*Woodfordia fruticosa Kurz*	Lythraceae
11	Dikamali	*Gardenia resinifera Roth*	Rubiaceae
12	Gurmukhi/Gursukri	*Grewia hirsuta*	Tiliaceae
13	Gokhru	*Tribulus terrestris,Linn*	Zygophyllaceae
14	Harsingar/Kharsui	*Nyctanthus arbortristis*	Oleaceae
15	Jine	*Leea crispa*	Leeaceae
16	Ranbhendi	*Dodonea viscosa*	Sapindaceae
17	Koril	*Petalidium barlerioides nees*	Acanthaceae
18	Kasterua	*Hygrophila auriculata kSchum*	Acanthaceae
19	Kharoti	*Grewia hirsuta vahl*	Tiliaceae
20	Kudursi	*Bridelia hamiltoniana wall*	Euphorbiaceae
21	Kudmudi	*Gardenia gummifera Linn*	Rubiaceae
22	Kuda	*Holarrhena pubescens (Buch,Ham)*	Apocynaceae
23	Kala kuda	*Wrightia tinctoria*	Apocynaceae
24	Kuchala	*Strychnos nuxvomica*	Strychnaceae
25	Lokhandi	*Ixora arborea Roxb*	Rubiaceae
26	Morarphal	*Helicteres isora Linn*	Steculiaceae
27	Maruadona	*Carvia callosa Ness*	Acanthaceae
28	Nirmali	*Strychnos potatorum*	strychnaceae
29	Neel	*Indigofera tinctoria*	Papilionaceae
30	Phetra-safed	*Gardenia turgida Roxb*	Rubiaceas
31	Phetra-kala	*Tamilnadia uliginosa(Retz)*	Rubiaceas
32	Tarwad	*Cassia auriculata*	Caesalpiniaceae
33	Tarota	*Cassia tora Linn*	Caesalpiniaceae
34	Thuar	*Euphorbia tirucalli Linn*	Euphorbiaceae
35	Warangal	*Celastrus paniculata Willd*	Celastraceae

C: GRASSES AND BAMBOOS:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Ghonad	*Themeda triandra*	Gramineae
2	Bamboo-karka	*Dendrocalamus strictus(Roxb)*	Gramineae
3	Bamboo-katang	*Bambusa arundinacea(Willd)*	Gramineae
4	Bhurbhusi	*Eragrostis tenella(Roem &*	Gramineae

		Schulf)	
5	Godhel	*Eragrostis interapta*	Gramineae
6	Katanbahari	*Aristida funiculata (TrinetRupa)*	Gramineae
7	Kunda/sum	*Eulaliopsis binata(Retz)(Mark)*	Gramineae
8	Kusal/Speargrass/	*Heteropogon contortus (Linn)Beau*	Gramineae
9	Marvel-Small	*Dicanthium annulatum(Forsek)*	Gramineae
10	Marvel-Big	*Dicanthium aristatum(poir)*	Gramineae
11	Mushan	*Iseilema laxum (Hack)*	Gramineae
12	Paonya	*Sehima sulcatum (Hack)Acamus*	Gramineae
13	Sheda	*Sehima nervosum (Staff)*	Gramineae
14	Tikhadi	*Cymbopogon martinii (Roxb)Watson*	Gramineae
15	Chir	*Imperata officinalis*	Gramineae

D: CLIMBERS:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Bandke	*Dendropthoe falcata(Linn)t*	Loranthaceae
2	Chilar	*Caesalpinia decapetala(Roxb)*	Caesalpiniaceae
3	Chilati	*Mimosa hamata(Willd)*	Mimosaceae
4	Chilati badi	*Acacia torta(W & A)*	Mimosaceae
5	Dhimarval	*Celastrus paniculata(Willd)*	Celastraceae
6	Dudhi/Nagvel	*Cryptolepis buchanani(Roem)*	Periplaceae
7	Eroni	*Zizyphus oenoplia(Linn)*	Rhamnaceae
8	Gunj	*Arbus precatorius(Linn)*	Fabaceae
9	Gulvel	*Tinospora cordifolia(Willd)*	Menispermaceae
10	Gurar, Nasvel	*Millotia extensa(Baker)*	Papilionaceae
11	Kajkuri	*Mucuna pruriens(L)*	Fabaceae
12	Khadyanag	*Gloriosa superba*	Liliaceae
13	Khobarvel	*Hemidesmus indicus(Linn)*	Asclepiadaceae
14	Kukuranji	*Calycopteris floribunda*	Combretaceae
15	Mahulvel	*Bauhinia vahlii(Wand A)*	Caesalpiniaceae
16	Musalikand	*Dioscorea pentaphylla(Linn)*	Dioscoraceae
17	Papri,Lalvel	*Ventilage denticulata(Willd)*	Rhamnaceae
18	Palasvel	*Butea superba(Roxb)*	Fabaceae
19	Piwarvel	*Combretum ovalifolium(Roxb)*	Combretaceae
20	Ramdaton	*Smilax macrophylla(Roxb)*	Liliaceae
21	Shataori	*Asparagus recemosus*	Liliaceae

E: PARASITES:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Amaraval	*Cuscuta reflerxa(Roxb)*	Cuscutaceae

F: EPIPHYTES:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Vanda	*Vanda cesellata(Roxb)*	Orchidaceae

G: ENDEMIC/THREATENED PLANT SPECIES:

Sr.№	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Alichettu	*Eonymus godaverensis*	Celastraceae

COMMON AND ZOOLOGICAL NAMES OF THE WILD ANIMALS AND BIRDS COMMONLY FOUND IN SIRONCHA FOREST DIVISION

A: WILD ANIMALS:

Sr.№	COMMON NAME	SCIENTIFIC NAME
1	Aswal/Bhalu/Riksha/ Bear	*Melursus ursinus*
2	Bandar/Monkey	*Rhesus macaque*
3	Bagh/Sher/Tiger	*Panthera tigris*
4	Bhekar/Barking Deer	*Muntiacus muntjak*
5	Bibta/Panthe/Tendua	*Panthera pardus*
6	Bison/ Gaur	*Bos gaurus*
7	Chausingha	
8	Cheetal/Deer/Hiran	*Axis axis*
9	Common langur/ Hanuman Bandar	*Presbytis entellus*
10	Flying squirrel	*Petaurista petaurista*
11	Fox/Lomadi/Lomas	*Vulpes bengalensis*
12	Hare/Shasha	*Lepus ruficaudatus*
13	Jackal/Kolha/Siyar	*Canis aureus*
14	Jungle cat/Ran Majar	*Felis chaus*
15	Kalbit/Kalamrug/Black Buck	*Antelope cervicapra*
16	Nilgai/Blue Bull	*Boselaphus tragocamelus*
17	Porcupine/Shahi	*Hystrix indica*
18	Sambhar	*Cervus unicolor*
19	Wild boar/Ran Dukar/Jungali Suar	*Sus cristatus*
20	Wild Buffalo/Ran Bhains	***Bubalus bubalis***
21	Wild dog/Ran Kutra/Jungli Kutta	*Cuon alpinus*
22	Wolf/Landaga/Bhendia	*Canis lupus*

B : BIRDS:

Sr.№	COMMON NAME	SCIENTIFIC NAME
1	Painted Sandgrouse	*Pterocles indicus*
2	Common Sandgrouse	*Pterocles exustus*
3	Pea Fowl/Mayur/Mor	*Pavo cristatus*
4	Grey Jungle Fowl/Jungli Murga	*Gallus sonneratii*
5	Painted Partridge	*Francolinus pondicerianus*
6	Blackbreasted Quail	*Couturnix coromandelicus*
7	Red Spour Fowl	*Galloperdix spadicea*
8	Crane	*Grus antigone*

9	Spotted Bill Duck	*Anas poecillorhyncha*
10	Pigeon	*Treron phoenicoptera*
11	Dove	*Streptopelia spp*
12	Cotton Teal	*Nettapus coromandelienus*
13	Whistling Teal	*Dendrocygna javanica*

C : REPTILES:

Sr.№	COMMON NAME	SCIENTIFIC NAME
1	Crocodile/Magar	*Crocodilus porosus*
2	Cobra	*Naza naza*
3	Karait	
4	Viper	
5	Dhaman	
6	Rat Snake	
7	Ghorpad	*Varanus griseus*
8	Common Lizards	

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PART—I

SUMMARY OF FACTS ON WHICH THE PROPOSALS ARE BASED

CHAPTER—I

THE TRACT DEALT WITH

SECTION: - 1.1: NAME AND SITUATION

1.1.1.1: This working plan deals with the entire forest areas of Sironcha Forest Division at Allapalli, extending over Asarali, Dechali, Jimalgatta, Kamlapur, Pranhita and Sironcha forest ranges. It excludes the areas which have been handed over to Forest Development Corporation of Maharashtra Limited for specific management purpose**.** Sironcha Forest Division falls under civil jurisdiction of Gadchiroli District of Maharashtra State. Sironcha (full) and Aheri (part) talukas are at lower level civil jurisdiction.

1.1.1.2: The forest areas of Sironcha Forest Division occur in the compact blocks and in some scattered patches. Forests of this division lie between the parallels of latitudes 18° 41' 15" to 19° 20’ North and between the meridians of longitudes 79° 55' 19” to 80° 22' 30" East.

1.1.1.3: As per the Form № 1 of Sironcha Forest Division, the forest areas are as follows:-

Table No.1

TABLE SHOWING THE LEGAL STATUS WISE AREA

Sr.№	Legal Status	Name of the Blocks	Area (hectare)	Remarks
1.	Reserved Forest	Sironcha A Class	78,850.444	Reserved Forests declared pre independence
2.	Reserved Forest	Sironcha B Class	9,006.549	
3.	Reserved Forest	Korepalli	6,478.610	
4.	Reserved Forest	Jimalgatta	31,537.720	
5.	Reserved Forest	RF of Surveyed Villages	15,059.370	Reserved Forests declared post independence
6.	Reserved Forest	RF of Unsurveyed Villages	124,556.490	
7.	Protected Forest	PF of Surveyed Villages	10,538.800	Protected Forest not declared Reserved Forest
8.	Protected Forest	PF of Unsurveyed Villages PF	1,751.090	
9.	Protected Forest purchased by FD		6.080	From Guruji
10.	Grand total of forest area		277,785.160	
11.	Reserved Forest	RF under FDCM	13,142.686	
12	Protected Forest	PF under FDCM	2,985.580	
13	Total Forest under FDCM		16,122.186	
14	Area with Forest Department: RF		252,346.504	
15	Area with Forest Department: PF		9,316.470	
16	Area with Forest Department: Total		261,662.974	
17	Miscellaneous area		49, 164.415	
18	Area available for management with FD		212,498.579	

Out of total forest areas under forest department, the area handed over to Forest Development Corporation of Maharashtra Limited Project Division Pranhita at Allapalli is 13,142.686 ha of Reserved Forest and 2979.500 ha of Protected Forest i.e. total 16,122.186 ha. Reserved Forest 252,346.504 ha and Protected Forest 9,316.470 ha summing up to 261,662.974 ha is with Forest Division. Out of 261,662.974 ha forest area, 49,164.415 ha area is miscellaneous area of which 723.736 ha is river bed declared as reserved forest and remaining 48,440.679 ha is difference between notified and planimetted area. Present working plan deals with **212,498.579 ha**.

1.1.1.4: The boundaries of the tract dealt with are as under:-

North: Boundaries of Allapalli Forest Division and Bandia River along Bhamaragad Forest Division of Maharashtra State.
East : - River Indravati along Chhattisgarh State Boundary.
South: - River Godavari along Andhra Pradesh State Boundary.
West: - River Pranhita along Andhra Pradesh State Boundary.

SECTION-1.2: CONFIGURATION OF THE GROUND

1.2.1.1: The major portion of the area is vast plain or undulating ground with hilly region. The hills are rugged and steep especially at the higher slopes. It has an average elevation of about 130 meter above mean sea level (MSL).
1.2.1.2: North and North West regions of Asarali and Sironcha Ranges show rugged hilly terrain with occasional extension in the south and South-Eastern directions. Occasional hillocks are also met with around Kopela, Jhinganoor and Somnur.
1.2.1.3: In Dechali block greater part is rugged and hilly. Garewada hills running from North-East to South-East have at places elevation upto 620 m (MSL). Pranhita range has almost entire portion with rugged hills. Lakhameta hills run from North to South and to South-West. Average altitude of the hills varies between 230 m to 400 m above mean sea level (MSL).
1.2.1.4: Some important elevations being Banglagatta 534 m (MSL), Channagadalgatta 532.5 m (MSL) and near Rompalli 660 m (MSL). Hills bordering Karancha, Enkabanda and Motakpalli are very steeps. Loha hills of Dechali range have an elevation of 400m (MSL).
1.2.1.5: The foot hills have an average altitude of 170m (MSL). Jimalgatta and Korepalli blocks are having plains along the West. Umanoor and Edranga blocks have flat or undulating plains with isolated hillocks.

1.2.2: DRAINAGE

1.2.2.1 The main streams of the area are Siroondalmadgu, Matten-togu, Palametta nala and Attewagu which discharge into the river Pranhita. Chalcuwagu and Aipeta nala discharge into the river Godavari. Lohawagu, Pattigaon nala, Bodela nala discharge into the river Indravati. Main areas of Dechali and Edranga blocks drain into the river Pranhita. Entire tract of Pranhita, Kamalapur Jimalgatta range is interspersed with numerous big and small nalas. These drain into the rivers Indravati and Pranhita. Entire tract of this division is bounded by rivers i.e. Zamela nala and Bandia on the north, Indravati, Godavari and Pranhita on the east, south and west respectively. These rivers

retain water for the year long. All these rivers finally merge into the river Godavari and flow toward east.

SECTION: 1.3: GEOLOGY, ROCK AND SOIL

1.3.1.1: The Geological successions of formations as noticed in this tract are given in the following table: –

Table №-2

TABLE SHOWING GEOLOGICAL FORMATIONS

Sr №	Origin	Geological Formations	Rocks Presents
1	Recent	Alluvium	Alluvium soil, Laterite
2	Upper Gondwana	Kota Maleri beds	Sandstones, shales, clay
		Chikiala beds	Sandstones
3	Lower Gondwana	Kamti Series	Sandstones and shales
4	Upper Cuddapah	Pakhal series	Conglomerates, siliceous limestones, slates
5	Archaeans	Crystalline or metamorphic series	Gneisses, granites, schists

1.3.1.2: Archaeans: These formations are seen in Raspalli, Timaram, Deoalmari, Dechali, Kamalapur and Jimalgatta ranges. Granites and holocrystalline rocks composed of quartz, feldspar and mica or hornblende are found with varying grains. Gneisses also consist of mica, quartz and vein quartz.

1.3.1.3: Upper Cuddapah: These are prominent in North-East portion of Sironcha range and major parts of Asarali range in North-West, South-East direction. Outcrops of these types at Sironcha and Yenlaya villages are also common. In hilly areas of Dechali range some formations of this type are seen. Conglomerates, quartzite, breccias, slate, shales, limestone and coal bands are common.

1.3.1.4: Lower Gondwana: These formations are seen near Sironcha, Yetakota, Darasewada, Tumnoor and Wardham. Sandstones are fragile.

1.3.1.5: Upper Gondwana: Sandstones of Kota Maleri series with red clay bands and well defined limestones are seen in South-East portion of Sironcha range.

1.3.1.6: Recent: Alluvial deposits occur along banks of river Pranhita, Indravati and Godavari. Prominent are near Moyabinpetha, Wedgudam and Rengunta. Alluvial strip is very narrow

1.3.2.1: MINERALS: Feldspar, Hornblende, Mica, Quartz and Limestones are common. Out of these, the commercially valuable minerals are very rare. Near Kopela and Somanpalli, the water contaminated with oil is also of very little commercial value. Coal belts or other minerals are also of little commercial importance. However, only limestone happens to be of some importance. Kamti sandstones yield good building material.

1.3.3. SOILS:

1.3.3.1: Soil derived from the Archaeans deposits is of moderate depth. It is black clayey, overlying soft gray murrum with sand.

1.3.3.2: Soil derived from Cuddapah is clay loam and very fertile and deep. Soil derived from upper Gondwana types is sandy and soft. The area bears good quality miscellaneous forest. Soil is fragile and easily eroded. Lower Gondwana support deep and fertile soil which bears high quality miscellaneous forest. Well drained patches support teak.

1.3.3.3: Alluvial soil near river beds support high quality forest and Katang bamboo. Red soil derived from metamorphic rocks is poor, thin and gravely. Dark varieties are fertile and deep. Soil being ancient in origin has undergone repeated secondary modifications by addition of some constituents.
1.3.3.4: Regur or black cotton soil patches are intervening in middle portion of this tract. This is a fine grained dark soil which varies greatly in colour, consistency and fertility. It is highly argillaceous and becomes adhesive when wet. It is chemically rich and indicates high alkalinity at places. Kankar formations are also seen. Teak fairs very badly here due to lack of aeration.
1.3.3.5: Sandy loam soil, which is mosaic in character, is abundant in the area, often in the lower crust. It supports teak profusely.
1.3.3.6: Laterite soil is fairly common in the area and it does not support teak profusely, due to lack of moisture.

SECTION1.4: CLIMATE

1.4.1.1: Climate of Sironcha areas is hot and is of tropical type. Broadly speaking, there are four seasons, namely: The cold season, the hot season, monsoon season and post monsoon season. The cold season starts from November and continues up to mid – February. The cold is mild and the weather is extremely pleasant. It is followed by hot season from the middle of February till onset of monsoon in the middle of the June. During April and May, the heat of the day is unbearable, in spite of the dryness. The monsoon season is from the middle of June to September end. October and November are post monsoon month. The climate is humid and hot.
1.4.1.2: TEMPERATURE: The average maximum and minimum temperatures and the diurnal range during the different months of the year is given in the following table.

Table №3

TABLE SHOWING MAXIMUM AND MINIMUM TEMPERATURES
(Temperature in degree Celsius)

Month	Maximum	Minimum	Diurnal Ranges
January	34.05	10.88	23.17
February	35.30	12.56	22.74
March	39.08	13.48	25.60
April	41.90	19.48	22.42
May	43.73	20.14	23.59
June	44.66	20.23	24.43
July	36.43	19.90	16.53
August	33.90	19.80	14.10
September	34.14	20.80	13.34
October	35.24	21.75	13.49
November	33.42	14.38	19.04
December	30.94	9.93	20.01

Diurnal range of temperature is largest during March and shortest in rainy season. High temperature in summer adversely affects the vegetation owing to the exposure. The average mean maximum and mean minimum temperatures in the area recorded in old working plans are as follows:

Year	Month	Maximum mean	Month	Minimum mean
1956	May	48.1º Celsius	January	8.9º Celsius

1.4.1.2: RAINFALL: Some rainfall in the form of pre monsoon showers occurs in May. But the main rainy season is from July to October. Averages for this tract indicate that the rainfall during the month of June to October is about 93.5% of the annual rainfall. July and August are the months when maximum downpour is experienced. About 6.5% rainfall is received in post monsoon months.

Table №-4

RECORDS SHOWING RAINFALL DATA (in mm) FROM 1991 to 1999 AT SIRONCHA STATION

Year	**June**		**July**		**August**		**September**	
	NRD	**RF**	**NRD**	**RF**	**NRD**	**RF**	**NRD**	**RF**
1991	11	177.00	22	517.00	22	310.00	9	55.00
1992	09	270.00	13	358.00	21	418.00	9	172.20
1993	08	120.80	17	561.00	16	259.80	11	224.40
1994	12	190.20	23	461.80	14	40.80	10	82.00
1995	05	241.00	18	251.50	16	224.50	9	125.00
1996	11	175.60	21	318.80	27	460.40	12	310.00
1997	09	57.30	19	292.10	18	433.40	12	127.00
1998	NA	NA	NA	NA.	NA	NA	NA	NA
1999	15	262.70	24	331.60	21	370.50	18	204.50
TOTAL	80	1494.60	157	3091.80	155	2517.40	90	1300.10
AVERAGE	**10**	**186.83**	**20**	**386.48**	**19**	**314.68**	**11**	**162.51**

Table №-4 Contd

October		**November**		**December**		**Total**		**Average**	
NRD	**RF**	**NRD**	**RF**	**NRD**	**RF**	**NRD**	**RF**	**NRD**	**RF**
4	47.00	--	--	--	--	68	1106.00	136.0	221.20
1	13.20	--	--	--	--	53	1231.40	106.0	246.28
5	69.00	--	--	--	--	57	1235.00	114.0	27.40
2	48.00	--	--	--	--	61	1190.00	122.0	23.80
10	271.20	--	--	--	--	58	1113.20	116.0	222.64
4	21.20	--	--	--	--	75	1287.00	150.0	257.40
2	72.00	--	--	--	--	60	981.80	120.0	196.36
--	--	--	--	--	--	--	--	--	--
3	85.00	--	--	--	--	85	1336.60	121.4	190.94
31	626.60	--	--	--	--	477	9481	985.4	
4	**78.32**					**59.6**	**1185.13**	**123.2**	**1819.82**

Where: NRD= Number of rainy days.
RF= Rain fall in milimeter (mm)

Table №-5

RECORDS SHOWING RAINFALL DATA (in mm) FROM 1991 to 1999 AT AHERI STATION

Year	June		July		August		September	
	NRD	**RF**	**NRD**	**RF**	**NRD**	**RF**	**NRD**	**RF**
1991	14	56.10	21	368.70	21	414.80	10	48.50
1992	11	335.10	16	305.70	23	665.40	10	244.50
1993	13	250.00	20	516.50	13	262.70	15	228.30
1994	20	305.60	27	448.60	25	457.20	8	91.40
1995	9	180.30	20	485.50	12	329.70	9	162.90
1996	11	196.00	17	245.80	27	542.60	9	16.30
1997	11	236.50	18	239.20	17	355.10	12	12.10
1998	--	--	--	--	--	--	--	--
1999	11	394.00	18	195.00	15	289.10	16	214.90
TOTAL	100	2105.10	157	1395.00	153	3316.60	89	1274.50
Average	**12.5**	**263.13**	**19.62**	**399.57**	**19.12**	**414.57**	**11.12**	**159.31**

Continued:

October		November		December		Total		Average	
NRD	**RF**	**NRD**	**RF**	**NRD**	**RF**	**NRD**	**RF**	**NRD**	**RF**
2	22.00	--	--	--	--	68	1110.10	136	222.02
2	47.20	--	--	--	--	62	1597.90	124	319.58
9	31.90	--	--	--	--	70	1240.90	140	248.18
6	62.70	--	--	--	--	86	1765.50	172	353.10
14	23.59	--	--	--	--	64	1394.30	128	278.86
4	43.20	--	--	--	--	68	1190.60	136	238.12
4	66.90	--	--	--	--	62	1008.70	124	201.74
--	--	--	--	--	--	--	--	--	--
2	44.00	--	--	--	--	64	1157.00	128	165.28
43	509.80	-	-	-	-	544	10465	1874	2026.88
5.37	**63.72**	**--**	**--**	**--**	**--**	**68**	**1380**	**136**	**2027**

Rain gauges are maintained at Allapalli, Jimalgatta, Sironcha, Kopela and Rajaram. Average annual rainfall is higher in the southern portion of the division.

1.4.1.3: HUMIDITY: The average monthly relative humidity percentage for the period from 1978 to 2004 at Rajaram is given below:-

Table №-6

TABLE SHOWING HUMIDITY AT RAJRAM (%)

SrNo	Month	830 Hrs	1730 Hrs	Average
1	January	76.4	43.2	59.80
2	February	63.2	53.3	49.25
3	March	43.1	23.6	33.35
4	April	32.6	18.1	25.35
5	May	40.3	21.7	31.00
6	June	63.6	43.6	53.60

7	July	83.1	69.0	76.05
8	August	88.3	79.1	83.70
9	September	91.2	81.3	86.25
10	October	72.4	62.2	67.30
11	November	66.1	51.0	58.55
12	December	73.0	48.3	60.65

Above table indicates that the relative humidity is maximum in the month of September and then it gradually decreases till April while it suddenly increases in June

1.4.1.4: FROST: The phenomenon of frost in the tract does not occur.

1.4.1.5: DROUGHT: Though the rainfall figures do not show marked difference in the annual precipitation, large scale mortality has been noticed in teak around Kopela and Somanpalli villages in the past. Droughts are occasional. But its pronounced effect on the vegetation is noticeable. Established crop is not much affected due to drought. But the unestablished seedlings suffer a lot. The effect of drought on plantations is very acute. The erratic nature of monsoon in recent past has its severe impact on establishment of regenerations natural or artificial.

1.4.1.6: STORMS AND WINDS: The prevailing winds are North-Easterly from October to March and South-Westerly from April to September. The incidence of storm and wind is uncommon. Winds are generally moderate. Occasional storms in premonsoon period regularly occur leading to uprooting of old trees.

1.4.2.1:- HEALTH CONDITIONS: Owing to the climatic conditions and luxuriance of the vegetation, the tract shows unhealthy conditions. Malaria used to be very common. It is now in control due to malaria eradication programmes. For want of clear, portable drinking water at many places, the diseases like diarrhea, dysentery, cholera and many other skin diseases are common. The existing medical facilities are inadequate. Due to insufficient land holding and dependence on monsoon for agricultural production, general public health is at lower rung. Main reason is the paucity of food grains, dependence on forests for fruits and other products and medicinal practices and inadequate employment level. Due to lack of proper and adequate employment, the youths are taking arms against existing Civil System under the shadow of active Naxalism.

SECTION: 1.5: WATER SUPPLY

1.5.1.1: There is an acute scarcity of water throughout the tract during the summer. Perennial rivers flow along the boundary of the tract dealt with. Rain water drains off quickly. Most of the inland nala go dry from December onwards and water is confined to pools only. There are no small or medium dams or inland water courses.
1.5.1.2: A few anicuts, vantalis and tanks have been constructed in the past with very small capacity to retain water.
1.5.1.3: The ground water is mostly tapped by dug wells and bore wells. The dug wells range in depth from 12 to 15 m and their yield varies from 45000 – 50000 liters a day. Most of the wells go dry in March. Bore wells range in depth from 50 to 60 m and their yield varies from 18000 – 25000 liters per day only.

SECTION-1.6: DISTRIBUTION OF AREA

1.6.1.1: Range wise distribution of forest areas is given in following table:

Table №-7

TABLE SHOWING RANGE WISE AREA DISTRIBUTION

Sr №	Range	Gross area (ha)	FDCM	Area without FDCM (ha)	Working Plan Area (ha)	Remarks
1	Asarali	31,962.259	6,980.510	24,981.740	23,973.768	*49,164.415
2	Dechali	32,981.356	3,177.163	29,804.193	24,070.506	
3	Jimalgatta	37,048.873	5,964.513	31,084.360	21,629.981	
4	Kamlapur	60,846.415		60,846.415	49,083.687	
5	Pranhita	54,580.990		54,580.990	35,396.830	
6	Sironcha	60,365.276		60,359.196	58,343.807	
Sironcha Division		277,785.160	16,122.186	261,662.974	212,498.579	

- Out of 49,164.415 ha, 48,440.679 ha area is difference between notified area and planimetted area. It may be due to approximate area as notified in the concerned notifications and 723.736 ha is under river bed notified as R.F.

SECTION-1.7: STATE OF BOUNDARIES

1.7.1.1: Total length of external boundary of the old reserved forests is 528.02 km. Out of which 111.65 form permanent natural features. Artificial boundaries are cleared 12 m wide with numbered R.C.C. pillars at suitable intervals, with sequence of serial numbers.
1.7.1.2: The total length of the boundary line of new reserved forests and balanced protected forest is 3227.01 km approximately The boundaries are not surveyed as per the scale and no proper demarcation have been carried out.

SECTION: 1.8: LEGAL POSITION

1.8.1.1: RESERVED FORESTS: The forests of Asarali and Sironcha Ranges under Indian Forest act, 1878 were declares reserved in 1879, (Notification No917(I) dt February 24,1879 The forests of Jimalgatta and Korepalli blocks were declared reserved by notification 479-3-XV dt July 5,1924. New Reserved Forests have been declared RF on 5th May, 1992
1.8.2.1: PROTECTED FORESTS: - Under the provision of MP Abolition of Proprietary Rights Act, 1950 (1151) the estate (Ex-Aheri Jamindari) vested in the State Government on date March 31, 1951. These forests were declared Protected Forests under sec 29 of IFA1927 and notified under Ex MP Gazette Notification No FLD-4669 II-8316-E, dated June 15, 1955. Out of these PF new RF has been declared as per the provisions of IFA, 1927. Remaining PF has been left to meet the local requirements under right and concessions.
1.8.3.1: Following are the various Government notifications under which the notifications for reserved forests and protected forests have been issued:

(1) 917(1) dated February 24, 1879 published in C.P. Gazette of 1st March 1879 Part I (a) / 172.
(2) Govt letter No 287/XIV-5-13 dated March 1908.
(3) Notification No 992 dated 6/10/1909.
(4) Govt letter No 673/XIV-5-36 dated 26/8/1912.
(5) Notification No 465 dated 19-5-1913.
(6) Govt letter No 684/666-XV dated 10/11/1936.
(7) Govt Notification No299/250-XI dated 30/4/1937.
(8) Govt Notification No309/201/XI dated 5/5/1937.
(9) Govt Notification No 599-397-11 dated 25/5/1942.
(10) Govt Notification No 2105-10-50-XI dated 8/7/1955.
(11) Govt Notification No FDM-1358/309-II-J dated 5/5/1959.
(12) No FLD/3685/9316/CR-42/F-3, dated May 5, 1992 under section 20 of IFA, 1927.
(13) No FLD. 3685/9316/CR-42/F-3.1994.

SECTION: 1.9: RIGHTS AND CONCESSIONS

1.9.1.1: RIGHTS AND CONCESSIONS IN RESERVED FORESTS: These forests are not burdened with any adverse rights, privileges or concessions except in small patches in new reserved forests in which settlement officer had written right for excavation of soil for domestic purposes and some minor inscriptions. Existing concessions cannot be claimed as rights or privileges and are terminable at the will of the State Government. The concession are (1) Grazing of cattle free or at concessional rates, (2) removal of certain kinds of forests produce for bonafide, domestic use by the forests villagers free, (3) enjoyment of commutation system. The rights which are destructive to the conservation and development of the forest are commuted by the Forest Settlement Officer.

1.9.2.1: RIGHTS AND CONCESSIONS IN PROTECTED FORESTS: - Before the abolition of proprietory rights all lands belonged to the proprietors. A village administration paper called "Wazib-Ul-Arz" was prepared at every settlement and plots of land were separately recorded showing the khasara numbers area which was set apart for particular purpose. Under section 202 of the CPLR Act, 1917, a provision was also made for punishing the violation of any of the customs. Under the provisions of the Madhya Pradesh Abolition of proprietory rights (Estates, Mahalas, Alienated Lands) Act, 1950 (I of 1951), all the community and other waste land became the property of the Government while occupied lands continued to be private. In order to distinguish between the rights existing on the new government waste land and on the other land, provision was made in the new Madhya Pradesh Land Revenue code, 1957, prescribing the preparation of a Nistar Patrak and Wazib-Ul-Arz for every village. The Nistar Patrak deals exclusively with the management and use of Government land while the Wazib-Ul-Arz deals with community and customs of user over private land.

1.9.2.2: The nistar inquiry had been conducted during the period 1954-56 and all the villages included in the schemes have been covered under it. The nistar officers have formed grazing and nistar zone by clubbing together surplus villages with deficit villages while self sufficient villages have been treated as individual zones. Villages assigned to particular zone can exercise their nistar rights within that zone. After notification of the reservation in 1992, the rights and concession exist in the protected Forests set aside for a village or group of villages. Details of RF and PF by villages have been given in draft plan under Appendix № I of volume II.

1.9.2.3: The classification of the villages into surplus, deficit or self sufficient for the exercise of nistar rights was made on the following basis-

(i) A village having tree clad area equal to half the occupied area was considered to be self sufficient.

(ii) A village having treed clad area more than half the occupied area was considered to be surplus village.

(iii) A village having treed clad area less than half the occupied area was considered to be a deficit village.

1.9.2.4: Misuse of Nistar: The misuse of nistar is prohibited vide section 24(2) of the Indian Forest Act, 1927 and shall be punishable a provided under section 77 of the Indian Forest Act, 1927 However, misuse of nistar from the protected forest areas shall be dealt as per provisions contained in Maharashtra Land Revenue Code 1966.

1.9.3.1: GRAZING: - Grazing rules were made applicable vide Government of Maharashtra Revenue and Forest Department Resolution No MFP-1371/237035-Z, dated 3rd November, 1973. The basis for forming grazing zones was that each head of cattle in Cotton-Juar tract should have 0.2 hectare grazing area and that in other tracts it should have 0.4 ha. Villages in which the grazing lands are less than the above requirements were clubbed with the neighbouring village area which exceeds the above standard. In villages where grazing land was just sufficient for the needs of the cattle of that village no rights of person residing in other villages to graze their cattle have been recorded in the "Wazib-ul Arz" i.e. the use and custom over private areas.

1.9.3.2: The cattle normally feed on palatable grasses but after the reduction in availability of grass after November/December, the grazers start lopping the branches of the trees like *ain, sisoo, apta, anjan, ficus* etc which leads to the degradation of the forests. The tribals normally keep large herds of scrub cattle which requires lot of fodder to maintain them and this adversely affects the development of the forest.

1.9.3.3: Villages clubbed as above constituted a grazing zone. The clubbing of the villages was done in such way that the villagers were not to take cattle to distance longer than the distance which the cattle can easily cover in a day. Within a specific zone all persons are at liberty to graze their cattle free until otherwise ordered by the Collector.

1.9.3.4: The Grazing Settlement has not been done so far in this division and so the number of grazing units has not been formed. The grazing settlement is usually done by a Revenue officer. The grazing is free of cost to all cattle of aboriginal tribals. The grazing of sheep and goats is not permitted.

1.9.3.5: The Government of Maharashtra vides its resolution No FCT/15 64/22-23-Y dated January 15, 1968 has granted the following concessions for villagers other than tribals:

(a) For villagers having land holding less than 20 acre, 4 cattle units are free for grazing.

(b) For villagers having land holding more than 20 acre, 8 cattle units are free for grazing.

(c) A family having more than the above cattle unit will have to take the grazing permit at the rates decided by the Conservator of Forests, South Chandrapur Circle Chandrapur.

1.9.3.6: The latest rates sanctioned by the Conservator of Forests, South Chandrapur Circle vide letter No G-2(3)12648, dated November 16, 1977 are as follows:

a) He and She buffalo	Rs 2/- each.
b) Cow and Bullock	Rs 1/- each.
c) Calf of buffalo more than 6 months but less than 3 years	Rs 1/- each.
d) Calf of cow more than 6 months but less than 3 years	Rs 0.50 each.

1.9.3.6: As per directives of the Government contained in Land Reforms Department Ex-Madhya Pradesh Memorandum No1290-1227-XXVII Dt 4th September 1953, sheep and goats are not allowed to graze in forests meant for production of big timber or in the forest area where villagers generally exercise their nistar rights.

1.9.4.1: OCCUPATIONAL NISTAR: In nistar patraks, occupational rights of communities have been recorded and recognized in several villages and entries are found in the Wazib-Ul-Arz for each village. The nistar is required by the villagers for bonafide and agricultural purposes, forest nistar generally includes timber of certain species and sizes for agricultural implements, houses and cattle sheds, fire wood, bamboos, thatching and fodder grasses, fencing material bark, fiber, minor minerals and paidawar i.e. edible fruits, flowers and roots, honey, wax etc. The rights and concessions are governed as per the provisions made in the nistar Patrak for each village, according to which, agriculturalists and agricultural Labourers are entitled to following kinds of forests produce for their nistar either free of charge or at concessional rates fixed by the Collector, from their nistar zones only.

1.9.4.2: Small Timber & Poles : According to the zonal arrangement made by the nistar officers, the villagers are entitled to obtain their nistar requirements of small timber and poles from the available material either from the forests included in a particular zone or on payment upto a certain quantum fixed by the Collector In order to meet the demand of the cultivators of the villages which were not included in the zone, the nistar officers have described that in the event of supply being in excess, in a particular zone after meeting the demands of zones on payment at the rates fixed by the Collector of the District.

1.9.4.3: Timber for construction of new houses from ex-proprietory forests :MP Government vide their memo No 2524/650/CR (Land reforms Dept dated October 29, 1956, it was decided that timber for construction of new houses can be supplied to the agriculturist on a certificate of the revenue officer at half the market rates.

1.9.4.4: Supply of *salai* wood in marriage ceremonies: -Several communities use green *salai* poles as *kham*, a*d*am and *thuni* in marriage ceremonies. The villagers are permitted to remove their requirements upto the maximum limit of 2 trees on permits.

1.9.4.5: Fuel Wood- Free removal of fuel wood from Khasara numbers set aside for nistar is permitted as per rights recorded in nistar Patrakas to the prescribed extent for bonafide use of the villagers. In Khasara numbers which are in excess, no such right is allowed.

1.9.4.6: Dry bamboos are allowed to be removed free from the ex-proprietary forests for bonafide nistar. Green bamboos are given on concessional rate fixed by Collector at nistar depots.

1.9.4.7: Where thorns are not available brush wood such as the lops and tops of the felled trees and of bamboos are permitted to be removed Where removal of thorns and brush wood is allowed either free or at nominal rates, the existing practice continues.

1.9.4.8: Barks, fibers and roots are allowed to be removed where it is customary to allow their removal for bonafide use and removal is non destructive.

1.9.4.9: *Moha, achar, tendu* or other edible fruits, flowers and roots are allowed to be removed free of cost from all over the forests for domestic consumption The removal however, is permitted by head loads only

1.9.4.10: As regards occupational nistar, ghont fruit and dhaora leaves are allowed to be removed by the charmakers free of charge. They are also allowed to remove *bakkal*, and *kahu* bark on nominal payment from trees marked for felling.

1.9.4.11: The then Government of Madhya Pradesh, under whose control these forests vested, issued detailed instructions regarding administration of nistar supply of timber etc to villages (new system) vide Government letter No 2396/2389-XXVII, dated October 16, 1956. These instructions which listed details about areas from where nistar was to be made available, extent of nistar to different categories, management of nistar and other forests; extraction and distribution of nistar material by the Gram Panchayats; Gram Sabhas or Nistar Panchayats, envisaged that forests would be managed on scientific basis by the Forest Department and communicated to the Village bodies which would then regulate the supply of nistar as per rules. The quantum of nistar was to be regulated as per the Government order No336/1606-XXVIII, dated June, 1953, which listed the following categories of forest produce and the nistar over the same.

1.9.4.12:GRAZING: CULTIVATORS: Two Plough cattle per plough plus four other including one she buffalo.

1.9.4.13: AGRICULTURISTS: Four cattle and four sheep or goats/house hold, artisans, Labourers etc.

1.9.4.14: TIMBER:

AGRICULTURAL IMPLEMENTS: Eight poles upto 45 cm girth and timber actually needed for implements.

MACHAN: Four poles upto 45 cm girth at every third year.

REPAIRS TO HOUSES: Up to ten poles of satkatha (MiscTree species) upto 60 cm girth, if needed.

FOR NEW CONSTRUCTION: As required but on payment and also subject to availability.

1.9.4.15: BAMBOO :

(a) AGRICULTURIST: 50 bamboos.(for repairs)
(b) NON – AGRICULTURIST**:** 25 bamboos (subject to availability)

1.9.4.16: GRASS FOR THATCHING:

(a) AGRICULTURIST: Four cartloads.
(b) NON-AGRICULTURALIST**:** Four cartloads.

1.9.4.17: MISCELLANEOUS:

i) **FUELWOOD:** Hundred head loads or five cartloads.

ii) THORNS AND BRUSH WOOD :

(a) AGRICULTURIST : Five cartloads
(b) NON-AGRICULTURIST Two cartloads

iii) LEAVES (excluding tendu) : No limit
iv) BAKKAL ROOTS : No limit
v) PALAS ROOTS : One head load
vi) FRUITS & FLOWERS : No limit
vii) KARAI AND KARKA BAMBOOS:

(a) AGRICULTURIST : Two cartload
(b) NON AGRICULTURIST : One cartload

1.9.4.18: In nistar patrak of each village khasara number set aside for nistar and grazing are recorded. The details regarding quantum of nistar, period during which it is to be allowed, payment if any to be made etc are not given in the Nistar Patrak in general. However, due to over exploitation of the forests for nistar in the past, unchecked illicit felling and over grazing, the ex-proprietary forests are no longer able to meet any of the nistar requirements of the people. Nistar is not the right. It is to be met as per the availability of forest produce and People`s cooperation in forest protection from fire, grazing and illicit removal of produce. It is equally pertinent that forest produce will be

available only when the forests are intact and not encroached upon for the other forestry operations. Some of the nistar areas have been encroached upon and are not left as forest. Hence there will be no fulfillment of nistar right in those areas.

1.9.4.19: Concession to erstwhile Forest Villages: Under the rules, framed by the Central Province Government, the forest villages were entitled to certain concessions purely for their bonafide use. However, these concessions are continued, even after they are declared as revenue village vide ADM 22/971 dated March, 1971. The competent authorities, subject to their power for sanctioning, are competent to sanction free grants. They are eligible for the free supply of following forest produces: wood and thorn for their agriculture work, a reasonable amount of wood and grasses for his house building and repairs, dead wood for fuel, bamboo and leaves, any edible fruits, flowers and roots required for his domestic purposes. Now these villages are no more forest villages. They are treated just like other villages for nistar and concession.

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CHAPTER-II

FLORA AND FAUNA

CHAPTER IIA

FOREST FLORA

SECTION-2.1: COMPOSITION AND CONDITION OF THE CROP

2.1.1.1 The forests of Sironcha Forest Division come under the two main groups of revised classification of the forest types of India on the basis of ecological grouping as classified by Sir H.G. Champion and Shri S.K. Seth. Main groups are

i) **3B/Cib**: **South Indian Moist Deciduous Forests** –In this category the forests of Asarali and Sironcha Ranges are included.

ii) **5A/Southern Tropical Dry Deciduous Forests** –In this category, the forests of Jimalgatta, Pranhita, Kamalapur and Dechali are included. Floristic composition of the area around Bejurpalli and Mudewahi of Parsewada Round in Sironcha Range show cane brakes along the water courses. This is a post climax stage in the succession relationship. The forests of Asarali and Sironcha ranges slowly merges into 3B/Cib type and said to be in the transitional stage between 3B/Cib and 5A. Even though the forests are said to be in the transitional stage, these forests represent a climax stage under the existing climatic, edaphic and biotic factors. There are local variations noticed, depending upon the nature of soil, topography and past treatment.

2.1.1.2 3B/South Indian Moist Deciduous Forests are further classified into: a) **Moist Teak Forest** and b) **Moist Mixed Deciduous Forests**. Wet mixed Forests with cane brakes – this category exists near villages Bejurpalli and Mudewahi around the nala banks. Climate is wet Cane brakes appear in compartments SA017 and SA036 of Sironcha range The extent of area is very small.

2.1.1.3 5A-Southern Tropical Dry Deciduous Forests – The sub types in this category are: (1) **Dry Teak Forests – 5A/Cib** and (2) **Southern Dry Mixed Deciduous Forests – 5A/C3**.

2.1.2.1: 3B/ South Indian Moist Deciduous Forests –

3B/Cib/ Moist Teak Deciduous Forests- This type occurs around Kopela, Somanpalli and Jhinganoor in Asarali Range. Underlying rocks are sandstones and shales. Soil is clayey loam, deep and nutritive Site of the crop quality varies from I to III and crop density between 0.5 to 0.9. Teak is the main species. The crop is well formed and sound. Fire damage is common while climber and other damages are negligible.

2.1.2.2 Main associates of *teak* are *ain, bija, dhaoda* and *surya*. On better sites, *teak* has its main associate ain. On the drier areas *bhirra* and *achar* are predominant. Under storey are mainly *garari, aonla* and *tendu.* Due to moist conditions the undergrowth is abundant and climbers are common. Katang bamboo occurs on nala banks and main water courses in dense growth. Bamboo is seen in inland areas. Main species are as follows:

(I) TOP STOREY:

Teak (Tectona grandis),
Surya (Xylia xylocarpa),
Bija (Pterocarpus marsupium),
Haldu (Haldina cordifolia),
Lendia (Lagerstroemia parviflora).
Ain (Terminalia latifolia),
Dhaora (Anogeissus latifolia),
Moha (Madhuca indica),
Karam (Mitragyna parviflora),

(II)MIDDLE STOREY

Garari (Cleistanthus collinus), *Aonla (Emblica officinalis),*
Tendu (Diospyros melanoxylon,), *Mowai (Lannea coromandelica),*
Rankela (Dillenia pentagyna), *Karai (Sterculia urens),*
Dhaman (Grewia tilifolia).

(IIa)

Katang (Bambusa arundinacea) *Karka (Dendrocalamus strictus)*

(III) GROUND STOREY

Murarphali (Helicteres isora), *Rankapas (Thespesia lampas)*
(IVa) *Bhuichind (Phoenix acaulis),* *Gursukri (Grewia hirsuta)*
Neel (Indigofera cassioide)
(IVb) Chir (Imperata officinalis) Mushan (Iseilema laxum)
Bhurbhusi (Eragrostis tenella) Kusal (Heteropogon contortus)
(V) *Palasbel (Butea superba)* *Ramdataon (Smilax xylanica)*
Lalbel (Ventilago denticulata) *Chilati (Mimossa hamata)*

2.1.2.3 Regeneration Natural_Regeneration of teak is in groups. The groups are widely separated and hence overall status varies from satisfactory to deficient. In mature crop the natural regeneration is seen scanty while in younger aged crop it is adequate. In areas of frequent fires, the regeneration has received a setback. Teak regeneration has been suppressed in areas having chir grass. Other species like *ain, dhaoda, lendia, surya* have profuse regeneration. While *bija, tinsa and haldu* have rare regeneration.

2.1.2.4: South Indian Moist Deciduous Forests –

3B/ Moist Mixed Deciduous Forests- This sub type occurs on sandy soils in the western and south-western part of Sironcha range. The areas is well drained, undulating and slopes towards west and southwest. The quality of the crop is I to III and density 0.5 to 0.8. Teak occurs sparsely i.e. around 5% of the crop. Near Chikela, Parsewada and Tumnoor, teak forms pure crop. Ain and dhaoda are the main species, and at places they constitute about 60% of the crop. Other associates are *bija, semal, haldu and lendia.* Second story consists of *garari, kuda, ghont, murarphali, chipti, and triumpheta* species. Climbers are mainly *Palasbel, kukuranji, and iruni*. Grasses are medium. C*hirgrass* occurs occasionally. *Bhurbhusi* and *kusal* are common.

2.1.2.5 On drier areas where soil is shallow and eroded, the forest is of low quality. Density varies from 0.3 to 0.6. Teak is practically absent. *Anjan* is common. Second storey is of *bhirra, rohan, khirni, dikamali, alichetu* etc.

Floristics

I) TOP STOREY:

Ain (Terminalia latifolia) *Dhaora(Anogeissus latifolia),*
Haldu (Haldina cordifolia) *Anjan (Hardwickia binnata)*
Bija (Pterocarpus marsupium) *Lendia (Lagerstroemia parviflora)*
Teak (Tectona grandis) *Moha (Madhuca indica)*
Surya (Xylia xylocarpa) *Kulu (Sterculia urens)*
Kakad (Garuga pinnata) *Kusum (Schleichera oleosa)*

II) MIDDLE STOREY

Garari (Cleistanthus collinus) *Achar (Buchanania lanzan),*
Tendu (Diospyros melanoxylon) *Kuda (Holarrhena pubescens)*
Ghont (Zizyphus xylopyra) *Bhirra (Chloroxylon swietenia)*
Karai (Sterculia urens) *Dikamali (Gardenia lucida)*

Rohan (Soymida febrifuga) *Aonla (Emblica officinalis)*
Bel (Aegle marmelos) *Dhaman (Grewia tilifolia*
Ranmendhi (Dodonea viscosa) *Alichettu (Euonymus davaransis)*
Khair (Acacia catechu)

IIa)

Karka bamboo (Dendrocalamus strictus) Murarphalli (Helicteres isora)

IV) GROUND STOREY

Gursukri (Grewia hirsuta) *Neel (Indigofera cassicide)*
Bharati (Maytenus emarginata)

IVb)

Chir (Imperata officinalis) *Mushan (Iseilema laxum)*
Bhurbhusi (Eragrostis tenella) *Speargrass (Heteropogon contortus)*
Tikhadi (Cymbopogon martini)

V)

Kukuranji (Calycopteris floribunda) *,Palasbel (Butea superba)*
Mahulbel (Phanera vahlii) *Iruni (Zizyphus oenoplia)*
Chilati (Mimosa hamata) *Nagbel (Cryptolepis buchanani)*

2.1.2.6:Regeneration- That of teak and other valuable species, it is moderate to scanty. *Garari* has good regeneration while that of *kuda* it is profuse, *khair* regenerates well in under stocked areas.

2.1.3: 5A Southern Tropical Dry Deciduous Forests

2.1.3.1: **Southern Tropical Dry Deciduous Teak Forests-** The forests of Jimalgatta, Korepalli blocks of old reserved forests and new reserved forest and protected forests of Pranhita, Kamalapur, Dechali, and Jimalgatta ranges are drier and show distinct ecological types. Teak forms major portion of the crop and becomes gregarious in patches. The hilly slopes around Enkabanda and Karancha show admixture of katang and karaka bamboo which has undergone gregarious flowering in 1988-89. The forests of Kodsepalli, Kolamarka, Repanpalli, Guddigudam, Deolmari and Venkatapur areas are also of the same category. Karaka bamboo in Kolamarka and adjoining areas are of very good quality. The quality of the crop various between II to IV. Lower slopes show poorer soil and Anjan takes the place in over wood

2.1.3.2: The crop is sound, well formed and middle to matured aged. Teak comprises upto 60% of the crop at places. Density varies from 0.4 to 0.9. Other associates are *ain*, *bija, haldu* and *semal*. Under storey of *garari, khair, medsing, baranga* is common On the poorer soils *medsing, garari, dikamali, lokhandi, anjan* stand out.

Floristics:

I) TOP STOREY

Teak (Tectona grandis) *Ain (Terminalia latifolia)*
Dhaora (Anogeissus latifolia), *Anjan (Hardwickia binnata)*
Bija (Pterocarpus marsupium) *Lendia (Lagerstroemia parviflora)*
Tendu (Diospyros melanoxylon) *Haldu (Haldina cordifolia)*
Karam (Mitragyna parviflora) *Hiwar (Acacia Leucophloea)*
Semal (Bambax ceiba) *Mowai (Lannea coromandelica)*
Kusum (Schleichera oleosa) *Kulu (Sterculia urens)*
Kakad (Garuga pinnata)

II) MIDDLE STOREY

Garari (Cleistanthus collinus) *Achar (Buchanania lanzan),*
Tendu (Diospyros melanoxylon) *Kuda (Holarrhena pubescens)*

Ghont (Zizyphus xylopyra) *Safed phetra (Gardenia latifolia)*
Dikamali (Gardenia lucida) *Rohan (Soymida febrifuga)*
Aonla (Emblica officinalis) *Khair (Acacia catechu)*

(IIa)

Katang (Bambusa arundinacea) *Karka (Dendrocalamus strictus)*

III) GROUND STOREY

Gursukri (Grewia hirsuta) *Bhuichind/Chind (Phoenix acaulis),*

IVa)

Neel (Indigofera cassicide) *Murarphal (Helicteres isora)*

IVb)

Chir (Imperata officinalis) *Mushan (Iseilema laxum)*
Bhurbhusi (Eragrostis tenella) *Kusal (Heteropogon contortus)*
Rosha (Cymbopogon martin)

V)

Kukuranji (Calycopteris floribunda) *Palasbel (Butea superba)*
Mahulbel (Bauhinias vahlii) *Kachkuri (Mucuna pruriens)*
Chilati (Mimosa hamata) *Nagbel (Cryptolepis buchanani)*

Regeneration of teak is in groups. These are adequately regenerated *Khair* and *anjan* have regenerated well in the under stocked areas Regeneration of other valuable species sparse and patchy.

2.1.3.2: Southern Dry Mixed Deciduous Forests: The local sub-types found in the tract are: (a) Mixed teak forests, (b) High quality mixed miscellaneous forests and (c) Low quality mixed miscellaneous forests.

2.1.3.3: Mixed teak forests This type of forest is seen on flat as well as gentle to steep slope in patches scattered over the area of Dechali block. Further sub-divisions are (a) Teak-Terminalia-Anogeissus-Pterocarpus-Xylia sub type and (b) Teak Terminalia-Anogeissus sub-type.

2.1.3.4: Teak- Terminalia- Anogeissus- Pterocarpus-Xylia sub-type: It occurs near Garewada, Dodgir, Maralpur, Asli and Kolamarka. Areas are well drained. Soil is deep sandy-loam to clay-loam and supports very good quality forests of site quality I to III. Teak is 20 to 30% in the crop composition. In moist patches ain predominates upto 30-35% and dhaoda upto 20-25% bija 15%. Surya, kusum and karai are common in second storey. Younger trees are sound and well grown, but older trees are branchy and malformed due to fire damage. Natural regeneration of teak is scanty and patchy, that of ain and other species, is profuse. Density varies from 0.5 To 0.7. Trees are young to middle aged with fairly good proportion of over mature trees. Bamboos are abundant. Under growth is sparse. Grasses are common in open patches.

2.1.3.5: Teak- Terminalia- Anogeissus sub-type: This type occurs in small portions along prominent nala in South-Western and mid northern portions of Dechali block. The soil is of alluvial type. In small patches the soil is dry, stony and shallow. Quality of the crop is III to IV and density 0.4 to 0.6. Teak proportion varies from 20 to 30% while that of ain 25-30% dhaora 20-25% and tendu upto 15%. Trees are young to middle aged with a few mature malformed trees here and there due to heavy exploitation in the past. Regeneration of teak is scanty, that of ain, khair is scanty and patchy good quality bamboo is seen all over.

2.1.3.6:– High Quality Mixed Miscellaneous Forests: This type of forest occurs on flat and fairly sloppy areas in Garewada, Todka and along Indravati river upto Dodgir, Pattigaon and Kolamarka in the West. Site quality is III to IV and the crop is formed of ain 30-40% with dhaora 15%, Lendia 20%. Jamun, kala tendu, arjun are found along nala. Bamboo forms dense under storey over large patches. Undergrowth is sparse. Regeneration is poor. Crop is

moderately sound, mature showing ill effects of fires. Trees are young to middle aged. Fairly good proportion of mature and over mature trees with young to middle aged trees of under story is common.

2.1.3.6:– Low Quality Mixed Miscellaneous Forests: This type of forests are common in plains and hills. In plains the soil is of alluvial type, poor, thin, gravelly, light coloured and mixed with hard yellowish brown murrum. On the hill slopes the soil is dry, shallow and strewn with boulders. At many places rock is exposed. Forest near the habitations is comparatively more deteriorated due to biotic interference. Dhaoda, ain, tendu, and lendia are predominant species in such areas. Further signs of deterioration become evident with presence of thorny, species. This sub-type is further divided into following local sub-types: (a) Ain, dhaoda, tendu, garari, (Terminalia - Anogeissus _Diospyros - Cleistanthus) sub-type, (b) Anjan (Hardwickia binnata) sub-type and (c) Salai (Boswellia serrata) sub-type.

2.1.3.7: Terminalia- Anogeissus- Diospyros-Cleistanthus sub-type: This sub-type occurs almost over the entire tract of Kodsepalli, Rajaram, Pranhita, Vatiranga and Loha blocks. Site quality of III with density 0.4 to 0.6 is commonly seen. Good quality bamboo is present in sheltered localities like Ambezara, Korepalli, Repanpalli and Dechali. Stocking is fairly good. This is edaphic sub-type. Under storey is in differentiable from the top canopy. Scanty undergrowth and coarse grasses are common. Katang bamboo is seen in thickets along Pattigaon nala. Ain has good regeneration, while that of *bija, tendu, tinsa, khair* is in scattered groups.

Floristics

(I) *Ain (Terminalia latifolia), dhaora (Anogeissus latifolia), lendia (Lagerstroemia parviflora), hiwar (Acacia leucophloea), anjan (Hardwickia binnata), bija (Pterocarpus marsupium), rohan (Soymida febrifuga) chichwa, (Albizia odoratissima), harra (Terminalia chebula), bahera (Terminalia bellerica), semal (Bombax ceiba), jamun (Syzygium cumini), kulu (Sterculia urens) haldu (Haldina cordifolia), Moha (Madhuca indica), teak (Tectona grandis), mowai (Lannea coromandelica), karam (Mitragyna parviflora), Garari (Cleistanthus collinus) aonla (Emblica officinalis), apta (Bauhinia recemosa), khair (Acacia catechu), ghont (Zizyphus glaberrima), kakai (Flacourtia indica) khirni (Mimusops hexandra) medsing (Dolichandrone falcata), kalaphendra (Randia uliginosa), lokhandi (Ixora parviflora), palas (Butea monosperma), gugal (Gardenia latifolia), achar (Buchanania lanzan), kusum (Schleichera oleosa), kumbhi (Careya arborea), dhaman (Grewia tilifolia), bell (Aegle marmelos), kuda (Holarrhena pubescens), amaltas (Cassia fistula)*

(IIa) *Dendrocalamus strictus (in sheltered pockets)*

(III) *Neel (Indigofera cassicide), gursukri (Grewia hirsuta)*

(IVa) *Dhawai (Woodfordia fruiticosa), bhuichind (Phoenix acanuis)*

(IVb) *Mushan (Iscilema laxum), bhurbhusi (Eragrostis tenella), kusal (Heteropogon contortus), ghonad (Themeda triandra),*

(V) *Gunj (Abrus precatorius), chilati (Mimosa hamata), Palasbel (Butea superba), chilati (Mimosa hamata), Nagbel (Cryptolepis buchananii), kukranji (Calcopteris floribunda), lalbel (Ventilago denticulata)*

2.1.3.8: 5/E-4 Hardwickia sub-type: This type occurs on shallow gravelly or clayey soils i.e. on the abondoned cultivation. Surface soil has become hard and impervious. Stocking is poor. Crop is stunted. Underwood is in differentiable from the overwood. Under growth is scanty. Predominance of anjan is remarkable, i e upto 60% of the crop. Reproduction from root suckers is a common site, and that from natural seedlings is also seen. Absence of old trees, poor shape and size of trees and near about appearance of savannah type forest are the other characteristics of this sub-type.

Floristics

Anjan (Hardwickia binnata),
Mowai (Lannea coromandelica),
Lendia (Lagerstroemia parviflora)
Khair (Acacia catechu),
Ghont (Zizyphus glaberrima),
Dikamali (Gardenia resinifera)
Ain (Terminalia latifolia)
Dhaoda (Anogeissus latifolia)
Tendu (Diospyros melanoxylon)
Garari (Cleistanthus collinus)
Palas (Butea monosperma)

III/Ivb:Very thin and patchy growth of dhawai (Woodfordia fruticosa), bhuichind (Phoenix acaulis), gursukri (Grewia hirstuta) coarse grasses are common.

2.1.3.9: 5/E-2 Boswellia sub-type: This type of forest occurs on hill slopes, ridges and spurs. Soil is very shallow, strewn with boulders. At many places parent rock is exposed. Salai with dhaoda, kulu mowai, and under storey of achar, khair are prominent. Bamboo is of poor quality. Grasses are abundant. Regeneration of many species is scanty.

Floristics

Salai (Boswellia serrata),
Kulu (Sterculia urens)
Dhaora (Anogeissus latifolia)
Tendu (Diospyros melanoxylon),
Rohan (Soymida febrifuga)
Karachi (Nyctanthus arbortristis),
Apta (Bauhinia recemosa),
Aonla (Phyllanthus emblica)
Ironi (Zizyphus oenoplia).
Lendia (Lagerstroemia parviflora),
Moin (Lannea coromandlica),
Gongal (Chchlospermum religiosum),
Ain (Terminalia latifolia),
Teak (Tectona grandis),
Achar (Buchanania lanzan),
Khair (Acacia catechu)
Chilati (Mimosa hamata),

Practically no shrubs occur. High dense growth of grass is seen,

2.1.3.10: Grass Association: The grass association is very diverse. Grasses very much dominate other herbaceous component of ground floor communities. *Clitoria biflora* is a prominent legume as associate of different grasses almost throughout the territory. Another legume *Cassia abrus* is fairly represented on ground floor. *Convolvulus flavus,* a slender herb listed as a rare and threatened species is one of the associates of grass community. Some other highly localized associate of grass are Costus specious, *Gloriosa superba, Taeca leotopetaloides*, the orchid *Aerides maculosum, Ensete superbum.* Parthenium hysterophorus is another associate of grass here, though it has yet to become menace. Grasses, which are in separate part of a dry deciduous forests, are quite uniform in its distribution here. None of them can be said to be localized. The important species of grasses are *Heteropogon ritchiei, Anthistria ciliata, Heteropogon contortus, Apluda varii, Ischaeumu sulcatum, Andropogan contortus.* The distribution of *cymbopogen maritini* is restricted to dry and exposed area only.

2.1.3.11: Species in need of conservation The following species are in need of conservation measures. *Doroxylum indicum, Radermachera xylocarba, Eriolaena hookeriana, Spondias mangifera, Careya arborea, Ehretia laevis, Hymenodictyon Excelsum, Litsea gluginose, Mallots phillipensis, Pterocarpus marsupium, Trema politoria, Ficus cunia, Yaesa indica.*

2.1.3.12: Medicinal Plants The important medicinal plants are found in this division e.g. *Asparagus racemosa, Chlorophytum tuberosum, Equisetum sp, Hygrophila auriculata, Bauhinia diffusa, Terminalia bellerica, Terminalia chebula, Emblica officinalis, Soymida*

febrifuga, Solanum violaceum, Glorisa superba, Pueraria tuberosa, Plumbago zexlamica, Iplengenia indica, Cassia absus, Holarrhena antidysenterica. Hemidesmus indicus, Helicteres isora, Evolculus alsinoides, Vernonia cineria.

SECTION-2.2: INJURIES TO WHICH THE CROP IS LIABLE:

The forests are liable to the following injuries

2.2.1.1: FIRE: Dry season from February to June is very long and during which the forests are susceptible to fires. Fires taking place by the end of winter and at the beginning of summer are not severe. Late fires in coupes closed to grazing are very damaging. The damage is serious when the freshly felled material is lying in the coupe and when it is regenerated. The young regeneration suffers a lot and crop like teak gets killed in the form of die back. Severe fires cause scorching heat leading to unsound and hollow stems. Which further render them to fungus and insect attacks. Fires cause soil erosion indirectly, by destroying vegetal soil cover. Occasionally, fires are set by people with an interest to collect flowers, fruits, good tendu flush and grass.

2.2.1.2: ILLICIT FELLING OF TREES- Illicit felling for timber, firewood, and poles is a very common practice. Adiwasis presume it is their right to cut any tree in the forest. Mostly it is aimed at encroachment for cultivation, an activity to support household a recreational means like passing time while axing a tree and so on. Large scale illicit cuttings are for the benefit of land grab movement. Earlier the people were not interested in wood as such but in the land cleared for cultivation. But due to increase demand for teak and valuable timber in bordering Andhra Pradesh and the terrain of this tract infested with Naxalites activities, threat to life to forest personnel and insufficient cover from police due to security reasons and above all the long river course available to float the timber in the form of rafting have multiplied the illicit fellings of trees in this tract in the recent past. It has been pointed by the locals that as the department is not resorting to tree felling, the skilled persons earlier engaged in departmental activities are without work. **Earlier the agricultural land along the Godavari river near Asarali-Ankisha tract used to grow Virginia quality of Tobacco. Which used to fetch handsome remuneration in the form of crop and employment to locals. Due to ban on Tobacco cultivation and no alternative to that, locals who were getting their bread and enjoying lavishly turned towards illicit felling of trees to compensate the loss**. They are lured by anti social activists mostly from across the borders and given money and tactical support they are indulging in such activities. The severity was in the year 2000. It is drawing attention of State and State is taking adequate measure not to repeat the incidence again.

2.2.1.3: ENCROACHMENT ON FOREST LAND- Encroachments is common. Settlers from outside and out of the State (from Andhra Pradesh) have cleared areas near Rajaram, Deolmari, Dechali, Asarali, Sironcha, Umanoor and a number of villages. Along the Allapalli- Sironcha road itself, the encroachments are numerous. Support of Naxalites is now a days considered a deterrent in detection and booking of these offences and has become a problem for local authorities. Large scale encroachment is seen mainly for the purpose of cultivation. The unsurveyed new reserved forests and protected forests need immediate surveying and demarcation to protect these forests from the menace of encroachment and dealing the culprit in the court of law.

2.2.1.4: GRAZING BY CATTLE- This is another damaging elements destroying young regeneration, plantations and soil texture by trampling. It is common near the villages. Unauthorised grazing is common. Though the carrying capacity of the tract is 268000 cattle units and available cattle units is 265000, the adverse impact of illicit grazing in the forests is

prominently visible. Because the grazing incidence is not uniformly distributed due concentration of villages near to water bodies and hence that of cattle. The over grazing and illicit have become a threat to the forestry here. The maximum depletion occurs when the forests are near to a large inhabitation. The tribals are in the habit of keeping a large herd of cattle. They are taken regularly to the forests for grazing. Since they do not milch the cows, they can hardly afford to stall feeds them. Grasses soon dry out by December and are not used by the cattle. Sometimes grasses are burnt by the graziers to get fresh lush green grass during next rainy season. Sometimes the anti social elements set the fire to eliminate grasses to their safe passage in the forests. This reduces the carrying capacity of the forests considerably. There is a large degree of unauthorized grazing. After the depletion of the grasses, graziers starts lopping green foliage, especially of ain (*Terminalia latifolia*), Sissoo (*Dalbergia sissoo*), Apta (*Bauhinia recemosa*), Kahu (*Terminalia arjuna*). There is no practice of stall feeding of grasses. The lopping of trees like ain, kakad, *Ficus* sp and apta has led to a degradation of the forests. The seedling and sapling crop of these fodder tree species have been almost eliminated from certain areas. Continuous and heavy grazing not only prevents regeneration of tree species, but also the young regeneration obtained during the period of closure, is lost soon after the area is opened to grazing. In areas with clayey soils, the trampling by cattle results in hardening of soil and a reduction in the soil aeration. In sandy soils, heavy grazing results in accelerated erosion and denudation. The grazing on undulating lands loosens the soil, which results in the soil erosion. The problem of migration of cattle is still severe. Practice of providing tags on the ears of cattle has not proved to be effective for reasons not known. According to the directives issued by the Government contained in the land reforms Department Ex-Madhya Pradesh memorandum No 1290-1227-XXVIII dated 4th September 1953, sheep and goats are not allowed to graze in forests meant for production of timber or in the forest areas where villagers generally exercise their nistar rights. But it is not uncommon to see goats grazing in timber forests. The goat and sheep grazing is prohibited in forests, because of their close level grazing in which the seedling or grass rhizome is uprooted.

2.2.1.5: GRAZING BY WILD ANIMALS- Chital damages the bark of young growth by rubbing their antlers. Chital , Sambhar and Nilgai browse seedling and coppice shoots. Bisons are more destructive, as they break sapling and poles in order to reach the first foliage. Some damage is caused by wild boar by uprooting young seedling and bamboo clumps The plantation of bamboo is severely affected by wild boar. Even covering of bamboo rhizome by stones is not effective. Putting Neem cake in the soil has acted as repellent to these wild boars. Damage by porcupine is also reported. They usually eat outer bark of *Haldu, Moha, Bhilawa* and *Amaltas* near the base of the tree. Monkeys cause damaged to flower and fruit trees and to succulent bamboo culms in the forests. Chital eats bark of Shivan at the base thereby girdling the tree which results in death. Sometimes only the outer bark and cambium are eaten and the cambium is seldom entirely removed, few trees are killed. But the grazing causes the scars and rough protuberance found on the base of nearly large Haldu and Moha and is partly responsible for unsoundness of these trees near the base. Bear deepens the soil near the root of the tree in search of ants. They also kill many amaltas trees digging of their roots for food in the hot season. But the damage caused by the wild animals in forests is not as serious as that caused by domestic animals. Moreover, the wild animals are the part and parcels of forest community. The damage done to forests is compensated by them in form of propagation of regeneration activities and maintaining the health of forests by eliminating the excess of certain trees and hence improving the biodiversity.

2.2.1.6: INSECTS AND FUNGII The attack of teak-skeletonizer (Hapalia machaeralis) and teak-defoliator (Hyblaea puera*)* are common in teak patches and occur almost every year during that period. It has been pointed out by Champion in his book “The problems of pure

teak plantation" that the estimated loss of increment because of defoliation is about 10% in these forests. The leaves which suffer attack during early part of the season, are soon replaced by the new leaves and the trees remains in foliage for a longer time. The attack of Dihammus cervinus (Cankar grub) is not seen in teak here. Often dying back of leading and lateral shoots of Tectona grandis is seen here. It is due to the insect called Alcidodes ludificator which tunnels several inches down the pith of a leading shoot and often kill the plant. The hallowness of teak is more because of fire than borer. Termites are found to attack the young seedling at the base of the collar especially in the degraded areas. Termites also attack the young pole crop of Dhaoda (Anogeissus latifolia) and Aonla (Emblica officinalis) by girdling them at the base. Dhaora (Anogeissus latifolia) is attacked by bark eating caterpillars, Indarbela quadrinotata. It also has a tendency to become hallow which subsequently are colonized by a white insect. Acacia leucopholoea is attacked by Hapalophraginium ponderosum causing woody galls. They should not be looked upon as the damaging agents. Rather they are sanitation agents. They thrive on mostly on succulent leaves or dead wood. In both ways they control the sanitation of the forests.

2.2.1.7: CLIMBERS AND WEEDS- These are common and infesting almost all the areas. Common amongst them are *Mahul (Bauhinia vahlii), Palasbel (Butea superba), Nagbel (Cryptolepis buchanani), Gorari (Milletia auriculata), Chilati (Acacia pinnata), Banda (Clematis triloba), Malkangni (Celastrus paniculata), Rhet bel (Combretum ovalifolium), Kharbel (Ventilago madraspatane), Kumbera (Vitex auriculata) and gorbel (Pueraria tuberosa).* They are not causing any damage to forests in large extent. They are helping in biodiversity. Most of them are of medicinal values to humane beings and wild animals. They need proper protection so that they would not be annihilated from the forests.

2.2.1.8: PARASITES AND EPIPHYTES- The following are the important epiphytic species present in this division *Visum articultatum, Cusenta specious, Crinum species, Gloriosa superba, Nictetiana splumbaginifolia, Waltheria indica , Smithia bigemna* The loss caused by them is not substantial. Their role is to have sanitation in forests.

2.2.1.9: FROST- The phenomenon of frost seldom occurs in the tract. Hence damage caused by frost is not known to the tract.

2.2.1.10: WINDS AND STORMS- The damage done by them is significant in the tract. Every year some trees or broken or uprooted due to wind or storms. Particularly during rainy season the wind velocity used to be high leading to breaking or uprooting of the trees. In the year 2004 in the month of January itself above 1000 trees were broken or uprooted in compartment number JA060, JA061 in Jimalgatta range alone. It is customary to have salvaging of wind fallen trees just after rainy season in the tract. On average more than 2500 cubic meter timber and 2000 fuel beats are extracted in this process

2.2.1.11: DROUGHT- Drought in real sense is not common in the tract. But untimely rains or scanty rains or long dry spell are common. It affects the regeneration and establishment of crop. It also hampers the growing stock in some extent.

SECTION :2.3: SOIL EROSION

2.3.1.1: Soil erosion is eminent along the long tract of Pranhita, Godavari and Indravati rivers and their tributaries small rivers or nala. Sheet erosion is common in entire tract. Gully erosion is common along river banks. Recent formations, metamorphic formation and sedimentary rocks easily eroded. Due to removal of vegetal covers in some areas the outcrop rock is seen. Even the erosion is not alarming in the forest tract as the most of the tract is under vegetal covers.

CHAPTER-II B

THE FOREST FAUNA

SECTION 2B:1: HISTORY OF WILDLIFE PROTECTION

2B.11.1 The tract dealt with has been an ideal natural habitat for the wildlife. The forests are mainly of miscellaneous species and are dense and rich so far as varieties of species are concerned. As per records a good varieties of wild animals inhabited the tract. Even today the tract is having a significant number of wildlife

2B..2: DISTRIBUTION OF WILDLIFE:

2B.2.1.1 The faunas are widely distributed in areas adjoining rivers. The wild animals commonly found in the tract are as follows:

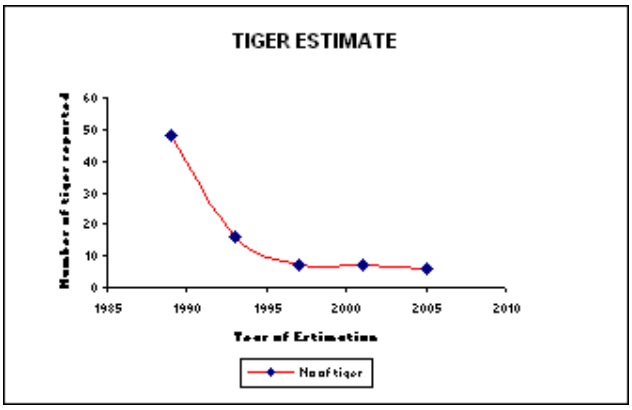
2B.2.1.2: – CARNIVORE: A large number of carnivores are found in the tract.

(1) Tiger (Panthera tigris) Tiger is found in small number. Reported figure as per 2005 Estimation, is 4. The current author of this draft plan report had opportunity to have sight of tiger in the hill range of Umanoor, across the Bejurpalli – Georgepetha road and near Repanpalli in Lakametta hill range during his tenure as Deputy Conservator of Forests Sironcha Forest Division during 2003-2004. The reporting of tiger came to the author in Tonder Forest in Kamalapur range during 2004 tendu season i.e. in may, 2004. It was reported to author that tigers are present in Kopela forests and Amdeli forests. These were confirmed by indirect evidences by determining the pug marks and other habits. The cattle killings in the tract by tiger were reported to the author in several cases and found to be correct by observing the killing pattern and disposal of the prize. Estimated population of tiger in the tract is more than that reported in 2005. It is certainly more than a dozen. The trend of tiger population in last two decades is on decline. Before two decades the sighting of tiger in the tract was frequent and gradually is declining. Estimated number of tigers in previous estimates is given in the following table. Estimated number is not exact due to interrupted monitoring in night for fear of Naxalites.

Table No-8

TABLE SHOWING THE TREND OF TIGER POPULATION

Year	No of tiger
1989	48
1993	16
1997	7
2001	7
2005	4

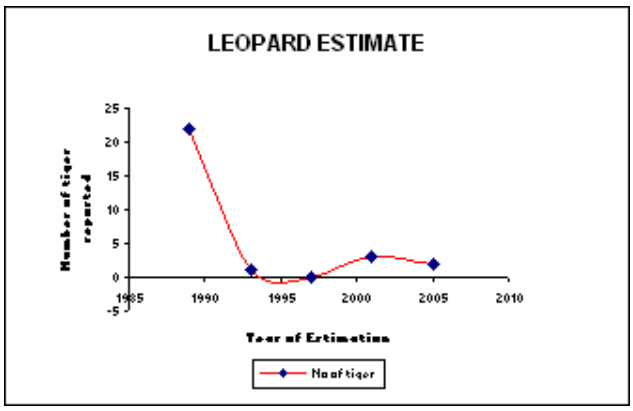


(2) Panther (*Panthera pardus*) Panther is common in Deolmari, Venkatapur, Sirkonda, Kolamarka, Jhinganoor forests. The author had numerous direct encounters in the forests to have the glimpses of this magnificent animal. It is found mainly in the forests nearing the villages. There are several cattle killing by this beast in the tract. Though the reported figure is less, its number is more than that reported. Because the report is not based on continuous monitoring. Night monitoring is almost restricted due to Naxalite threats.

Table No-9

TABLE SHOWING THE TREND OF LEOPARD POPULATION

Year	No of tiger
1989	22
1993	1
1997	0
2001	3
2005	2



(3) Hyena (*Hyena hyena*) This species is commonly seen in the tract. Almost entire tract experiences its presence. The author had seen this species in all tracts.

(4) Wild Dog(*Cuon alpinus*) The author had seen twice the pack of wild dogs near Gundera in Pranhita range. Report of wild dogs in Sironcha range was also received but could not be verified. Old records showed the presence in Asarali forests too.

(5) Wolf (*Canis lupus*) It is reported to be present in the tract.

(6) Jackal (*Canis aureus*) Jackals are found everywhere in the tract.

(7) Fox (*Vulpes bengalensis*) Just like jackals foxes are found in the tract.

(8) Jungle Cat (*Felis chaus*) Jungle cats are common in the tract.

2B.2.1.2: HERBIVORE- A large number of herbivore is found in the tract forming the prey base to carnivore. The species commonly found are: Bison (*Bos gaurus*), **Wild Buffalo (*Bubalus bubalis*)** Sambhar (Cervus unicolour), Cheetal (Axis axis), Nilgai (Boselaphus tragocamelus), Wild Boar (Sus scorfa), Sloth Bear (Melursus ursinus), Barking Deer (*Muntiacus mujtjak*), Langur (*Presbytis entellus*), Monkey(*Rhesus macaque*), Hares (*Lepus nigricollers), Hare, (Lepus reficaudatus).* The main species of concern is Langur and Wild Buffalo**.**

Langur- langur are mercilessly hunted by the tribals. They are hunted by felling the trees in group or by traping. It is by tradition. No impact is on the mind of people for their protection.

Wild Buffalo(*Bubalus bubalis*) Wild buffalos are migratory from the adjoining Chhattisgarh State. They are found in the island formed in the Indravati river. They cross to the Kolamarka tract during rainy season. They need special attention to be conserved. The tract was heaven for wild buffalo in the past. They were frequently seen in Kolamarka Forest Block. It has been reported in past that a disease named Foot and Mouth Disease (FMD) spread amongst the common cattle spread in wild buffalos due to share of common resources. That led to diminishing trend in their population. During summer the islands in Indravati near Chitweli Village serve as ideal site as water availability and plenty of forage in nearby area. Migration

in Kolamarka during rainy seasons is due to less disturbances of the tract. As that period the tract remains cut of main land due to inaccessibilty and plenty of forest forage availability.

2B.2.1.3: – RODENTS- There are so many rodents found in tract. It is difficult to enlist them. Main rodents are:

Flying Squirrel (*Petaurista petaurista),* Porcupine (*Hystrix indica*), mouse deer, rats, mices etc.

2B.2.1.4: WILD BIRDS- Jungles of the tract are full of avi fauna. The list has been given earlier. Even river tract attracts many avi fauna both native and migratory. Common amongst them are: Painted Sand Grouse (*Pterocles indicus*), Common Sand Grouse (*Pterocles exustus*), Pea Fowl (*Pavo cristatus*), Grey Jungle Fowl (*Gallus sonneratii*), Painted Partridge (*Francolinus pictus*), Grey Partridge (*Francolinus pondicerianus*), Black Breasted Quail (*Coturnix coromandelicus*), Red Spur Fowl (*Galloperdix spadicea*), Crane (Grusantigone), Spotted Bill Duck (Anas poecilorhyncha), Pigeon (Treron phoenicaptera), Dove (Streptopelia *spp*), Cotton Teal (Nettapus coromandelianus), Whistling Teal (*Dendrocygna javanica*) Cuckoo (*Cuculus varius*), Snipe (*Capella galliachges*) etc. Great Indian Hornbill group was also seen by the author in Kolamarka Forests during April, 2005.

2B.2.1.5: Reptiles- The tract is full of reptiles. Many types of lizards including monitor lizards are found. Snakes of various types are found. Even crocodiles (Magars) are found in the course of Pranhita , Indravati and Godavari rivers. They are seen basking in sun along the banks of Pranhita near Tekada Village in Sironcha range and elsewhere. They need attention towards conservation to them.

SECTION-2B.3: INJURIES TO WHICH THE WILDLIFE IS LIABLE

2B.3.1.1. The wildlife is liable to the following injuries:

2B.3.1.2.. SHIKAR/POACHING- The tract is entirely covered with forests and residents are mainly aborigin. They are fond of shikar i.e. hunting. They usually hunt in group and at special occasions like festival or to please their deities. Shikari from outsides were generally from Zamindar. Earlier Shooting Blocks were meant for official shikar upto early seventies of last century. Now a days shikar or poaching is totally prohibited. Poaching of tiger or panther was main cause of depletion of carnivore.

2B.3.1.3. FIRE : The entire forest is prone to fire annually. Some areas might be exception to it but the remote areas, which are the ideal habitat, burns annually. The forest fire damages the natural habitat and drives animals towards human habitation to take shelter and thereby they become easy prey to poachers and local villagers.

2B.3.1.4.WATER : Most of the streams, except a few big rivers, become dry during summer. Therefore, animals had to visit only a few waterholes. This fact makes the villagers and poachers easy to kill the wild animals.

2B.3.1.5. DISEASES- Wildlife are prone to diseases both of domestic animals and diseases confined to wild animals. No much studies have been done for diseases pertaining to wild animals. But wild animals use common resource that shared by domestic animals. Hence they are vulnerable to diseases pertaining to cattle. In past Foot and Mouth Disease of cattle spread over wild animals and particularly bison and wild buffalo and almost these species were wiped out from the tract.

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CHAPTER – III

UTILIZATION OF FOREST PRODUCE

SECTION– 3.1: AGRICULTURAL CUSTOMS AND ERQUIREMENTS OF THE POPULATION

3.1.1.1. The tract dealt is situated in Aheri(part) and Sironcha Tahsils of Gadchiroli District. The tract is sparsely populated. It is inhabited by Gond, Madia, Scheduled Castes, Navboudhas, (New Buddhists), Komti, Dhiwar, Madgi, Muslim, Chamar, Bengali etc who have settled in the villages. The migration from the nearby Andhra Pradesh is of main concern as they are resorting to encroachment upon the forest lands and getting cover from Naxalites whose bases are mainly in that State.

3.1.1.2. **Tahsilwise Socio-Economic Report is as follows**: The tract dealt with is the remotest tract of the Maharashtra State. It is on the trisection of Maharashtra, Andhra Pradesh and Chhattisgarh states in South-East corner. Sironcha and Aheri (part) tahsils are the revenue units. A total geographical area of the tract is 3169 square kilometer. Out of this forest area constitutes 2778 sq km amounting to 87.7% of geographical areas. Population dynamics on the basis of Socio Economic Survey published by Economic and Statistical Directorate for Gadchiroli District and pertaining to tract dealt with is as follows:

Table No-9
Table showing population

Taluks	Populated villages	Rith villages	Total villages	Population	ST %	SC%
Aheri	84	20	104	42000	48.2%	15%
Sironcha	114	34	148	59000	24%	24%
Division	**198**	**54**	**252**	**101000**	**36%**	**20%**

Where:
Rith: - Village as recorded in Revenue Record with geographical area but no human population.
ST: - Scheduled Tribes.
SC: - Scheduled Castes.

It is obvious that 56% population belong to Scheduled Castes and Scheduled Tribes.

Table No-10
Table showing cattle unit and carrying capacity of forest

Taluks	Cattle population	Sheep	Goat	Cattle unit	Carrying Capacity	Forest Labourer
Aheri	51636	2401	28014	103264	**268000**	21000
Sironcha	81099	578	17183	162198		58900
Division	**132735**	**2979**	**45197**	**265462**		**79900**

3.1.1.2:- *Adiwasis* like *Madias*, *Pradhan* and *Gonds* practice cultivation of primitive type. They still stick to their ancestral methods of cultivation during agricultural season. They depend mainly on forest labour. Their hardiness earns for them a considerable remuneration through forestry works. Their living condition in recent years has improved substantially, though more efforts are needed to improve their socio-economic status. Electrification of all villages has not been undertaken in interior villages. Due to which most of the villages in

interior are without electricity. Wherever power is available it is utilised for lift irrigation. Even diesel pumps are used for lift irrigation. But the shortage of petro fuel enhances their misery of lives. In entire tract there is only one Petrol Pump at Sironcha. Sironcha itself is in South-West Corner. It is far away from most of the villages in the remote area. Even supply of petroleum fuel at Sironcha is not normal. Paddy is the main crop and once it is harvested, the fields are left fallow for the remaining period of the year. Department of Agriculture has introduced some improved methods of cultivation, use of better quality seeds, manure etc. In this area, most of the people live in the thatched roof-huts built from stout posts of *ain, garari* or miscellaneous species and plastered with mud and *cow dung*. Modern housing patterns are coming fast as people are being provided with housing facilities under so many developmental schemes undertaken by the government.

3.1.1.3:- Main requirements for which the people depend on the forests are as under:-

(1) Small timber: - Poles of *ain, dhaora, garari, dhaman, tendu, shiwan* etc are extensively used for construction of huts and agricultural implements. Even teak is used by people for their bonafide needs by hook or crook. As they are getting indirect protection in the name of naxalism.

(2) Fire wood: – The demand for firewood is considerable, as it is used for providing light as well as warmth in the hut. Firewood is essential for cooking purpose. Fire is kept burning in and around the hut throughout the night, as a practice to keep the hut warm and keep away the wild animals.

(3) Bamboos: – These are used for preparation of mats, baskets and construction of huts and other materials for local use and for sale to other areas for earning livelihood.

(4) Thatching Grass: - This is commonly used for thatching the roofs of the huts.

(5) Grazing: - Cattle from the village resort to daily grazing in the adjoining forest. Grazing incidence is light in eastern part which is thinly populated. Incidence is moderately heavy in the forest bordering the thickly populated villages.

(6) Fruits, Flowers and Leaves: – Majority of the inhabitants being poor, they resort to collection of flowers and fruits of *mahua*, fruits of *tendu, khirni* and *achar* for their bonafide consumption. *Palas* and *Mahua* leaves are used for preparation of *patrawalies* (leaf plates) and *drona* (Cups) either for bonafide uses for their religious and customary functions or for sale to earn their livelihood. Tendu leaves provide earning during season.

(7) Fibers: – *Palas* roots are dug and cured to obtain fiber for making ropes. Twining climbers and their bark are also put to similar use.

(8) Other Products: – Edible tubers and roots are obtained by *Adiwasis* for consumption *Tendu* leaves are used for preparing *chutta* or *bidi* for local use. *Tendu* leaves are plucked by the villagers and given to licensee to pluck and processing of *tendu* leaves every year. It is the main bone of contention in Naxalites, Police and Forest Officials. And people of the tract are facing peculiar problem not getting the coveted employment of plucking *tendu* leaves during 2003 season (full) and 2004 and 2005 season (parts).

(9) Medicinal Products: - The tract dealt is very rich in medicinal plants found naturally. They are utilised by local *Vaidyas* or local people through their traditional knowledge. But the value added processes are seldom done in the tract. That leads to exploitation of people through middle men. Locals get meager remuneration for collection and extraction of medicinal products.

SECTION: 3. 2: MARKET AND MARKETABLE PRODUCTS

3. 2.1.1: MARKET: Local demand for various forest products is limited. Main market for the forest products particularly timber is at Allapalli in Gadchiroli District and Ballarshah in Chandrapur District, which are out side the tract dealt with. Earlier the main market for

timber used to be Ballarshah which is 200 km from Sironcha and 100 km from Allapalli. Even today the better quality timber is transported to Ballarshah and inferior one to Allapalli. The timber at these Depots is sold through open auction. Purchasers from various parts of Country participate here. The tract is devoid of any Railways Line. But now tract can boast to have all weather roads connecting most of the area. Presently, the work on Highway Connecting Mancherial (in A.P.) to Sironcha to Asarali- Patagudam to Bhopalpatanam(in Chhattisgarh) is in progress in non forest areas and Proposal for the forest areas required for widening of existing road has been sent to GOI through proper channel. A network of roads has been undertaken by Border Road Organisation(BRO) to link the entire tract for rapid development of tract. But due to Naxalites interference and opposition to road, still Dechali Range Headquarter remains cut off from the rest of tract during monsoon. There are still a large number of villages which are not connected to fair weather roads. Hence they are cut off any market facility. Other market places for timber or forest produces are Jimalgatta, Rompalli, Jhinganoor, and Repanpalli.

3.2.1.2: The forest produces in demand in these areas are as under:-

Teak – *Teak* timber is in great demand in all sizes.

Semal – Demand exists for timber over 120 cm in girth.

Ain, bija, haldu, shisham – Demand exists for timber over 121 cm in girth and length above 2 m.

Firewood – Firewood is in demand for various purposes. Small sizes are demanded for Particle Board manufacture. Medium sizes are needed by small carpenters for carpentry purposes. There is a great demand of firewood for charcoal manufacturing. Charcoal is manufactured at site near to Forest Depot duly sanctioned by competent authority and sent to consumption centers directly or Chandrapur and Ballarshah for further disposal.

Tendu leaves – There is a keen demand of *Tendu* leaves for bidi manufacture. But the bidi manufacturing centers are out side the tract and people of the tract are devoided of the employment so generated.

Other Products – Gum, honey, wax are collected for trade. Barks, roots, medicinal plants are extracted either for local consumption or for minor trade. Mahua flowers and fruits of *tendu*, khirni, achar are collected for bonafide consumption or for sale.

SECTION – 3.3: LINES OF EXPORT:-

3.3.1.1:- Timber extracted, at present is dragged to jungle depot, conveniently located along road side and then directly sent to Allapalli or Ballarshah. At Allapalli, there is saw mill operated by forest department which caters need of local people. Mode of transport is by truck. Transport of timber and other forest produce of the department are carried out by the government trucks of Transport and Marketing Division and trucks of other divisions and even sometimes by private haulage. Some of the important roads and cart tracks in these forests are noted below:-

Table No-11

TABLE SHOWING THE ROADS IN TRACT DEALT WITH

Sr №	Name of the Roads	Length in km	remarks
1	Allapalli-Sironcha road	100	All weather
2	Sironcha-Asarali road	32	All weather
3	Asarali –Somanpalli- Patagudam	24	Fair weather
4	Somanpalli – Kopela-Jhinganoor	30	All weather
5	Jhinganoor – Sirkonda - Rompalli	35	All weather
6	Sironcha – Amdeli -Kopela	40	Fair weather
7	Bamni-Tekada-Parsewada	25	Fair-weather
8	Parsewada-Mudewahi-Marpalli	35	Fair weather

9	Krneli- Karancha-Jimalgatta	25	Fair weather
10	Aheri-Deolmari-Venkatapur	40	Fair weather
11	Venkatapur–Zenda-Daeswada	35	Fair weather
12	Daesewada- Parsewada	8	Fair weather
13	Jimalgatta- Petha	26	Fair weather
14	Petha- Kalled	24	Fair weather
15	Kopela-Patagudam	16	Fair weather
16	Umanoor-Raspalli	12	Fair weather
17	Udera-Yemali-Koreli Cart track	22	Fair weather
18	Repanpalli-Zenda	20	Fair weather
19	Kolamarka-Pattigaon	10	Fair weather
20	Kistapur-Kamasur	26	Fair weather
21	Kamlapur-Garewada	10	Fair weather
22	Kamalapur-Rajaram	12	Fair weather
23	Petha- Dodgir	16	Fair weather
24	Rajaram-Tonder	35	Fair weather

SECTION –3.4:- METHODS OF EXPLOITATION AND THEIR COST:-

3.4.1.1:-Agency of exploitation: - Timber and fuel is extracted departmentally and through Forest Labour Cooperative Societies (FLCS). Felling and logging is done with cross cut saw. In some hilly portion the dragging is done by men, bullocks, buffaloes and elephants. In the interior areas, which are not served by good roads, timber is transported by bullock-carts. At places, Government trucks extract timber from forests to Ballarshah and Allapalli. Firewood is stacked in or out of the coupe or in depot in stacks of size 2m x 1.2m (where billet length is 1.2 m) and its multiples.

3.4.1.2:-Maintenance of registers in depots:

(i)The rules regarding the carting of timber:- The material is transported by the truck carrying three copies of carting challans (Form No9 –(A)-122) The carting challan carries the details like felling series, coupe number, species, measurement of logs, its volume, the truck number and name of the driver. In case of poles, only the number of poles and species, its girth class is written. The driver carrying the three copies of carting challan (Second, third and fourth) will hand over them to the depot officer. The depot officer then verifies the receiving material and acknowledges the receipt in all three copies. The depot officer then returns the fourth copy, while he retains the second and the third. The depot officer then makes the relevant entries in his register. The logs are remeasured in the depot and its entries are recorded against the old entries. Any discrepancy is reported to the field officer.

(ii)The rules regarding the maintenance of register: - The following registers are maintained in the depot:-

Daily receipt register: - It contains details of daily receipt. It contains the entries as stated in the carting challan.

Depot measurement register: - This contains the entry of the measurement of lots done in the depot.

Lot register: - The lot register contains details about the lots. The logs with same specification like grade, length class, girth class, species etc are put in the same lot.

Sale register: - This register contains details about the sale at the depot it contains the details like the name of purchaser, earnest money deposited, and the balance to be paid.

Dispatch register: - It contains the daily entry of the material being dispatched outside the depot.

Daily balance register: - This register records the daily balance of the material in the depot.
The register for departmental supply: - The register contains the following details:-
(i) Supply to government agency.
(ii) Supply to co-operative society.
(iii) Supply to government saw mills.
(iv) Supply to Forest based industries.
3.4.1.3:-The unified sale condition: - The sale at the depot and in situ are governed by the unified sale conditions. It requires that no person shall be allowed to bid unless he has made in earnest money deposit at the rate of 10% of the amount up to which the bidder desires to bid, provided that this 10% is not less than Rs 500/-. Once the bid is accepted, the timber in depot will lie at the risk of purchaser. Sales in the Depot are governed by Section 82 & 83 of IFA 1927. The payment is allowed to be made in two phases:
(a) 1/4 of the sale price along with a proportionate amount of Forest Development Tax within 7 days from the date of auction or date of communication of acceptance. An extension of further 23 days will be made to the purchaser, for which he has to pay an interest of 18% per annum.
(b) The balance 3/4 of the sale price along with the proportionate amount of the Forest Development Tax plus the entire amount of sale tax and income tax shall be paid within sixty days from the date of auction or date of communication of acceptance by the competent authority/ A further grace of thirty days will be given for which the bidder with an interest of 18% on the amount thereon for late payment.
If the auction purchaser fails to make the payment, as given in above schedule, Deputy Conservator of Forests concern may cancel such sale. The amount deposited by the auction purchaser either as earnest money deposited or 1/4 or FDT shall be forfeited to the government. The material will then be put to resale at the risk and cost of the initial bidder.
3.4.1.4: Grading rules: - The material brought to the depot is graded. There are three plywood qualities, P1, P2 and P3 and six trade quality grades viz 1,2,3,4,5 & 6. They are distinguished from each other on basis of 12 criterias, namely length, girth, knots, bends, etc. These grading rules are more or less on the line of the standard fixed by Indian Standard Institution
3.4.2.1: *TENDU*:-*Tendu*** leaf trade is nationalized since 1969. Now the leaves are collected and disposed of through the licensee fixed by the government through sealed tender method There are separate rules for sale of *tendu* leaves disposal.
3.4.2.2:-*Tendu* leave trade in the state is regulated as provided under the Maharashtra Forest Produce (Regulation of Trade) Act, 1969 and/or Maharashtra Forest Produce (Regulation of Trade in *Tendu* leaves) Rules 1969 and as per detailed notifications issued by Govt of Maharashtra every year inviting offers for permission to collect and remove *Tendu* Leaves from the notified *Tendu* units.
3.4.2.3: *Tendu* leaves are collected and tied into a *puda* or bundle each containing 70 leaves. These are then brought to the *Phadi* and handed over to the *Phadi Munshi*. He, in turn, pays the wages, as per rates approved by the Government from time to time for 1000 numbers of *Puda*s. *Puda*s are then arranged into lines for drying and then recorded, bagged and transported to the godown with valid permit.
3.4.3.1: Exploitation of timber consists of two main operations viz; felling and logging. Felling is done by saw and axe Power-chain saw are not used. Trimming of branches and knots is done by axe. Cross cut saws are also used for logging the poles. Timber logs are dragged to the road-side depot and then transported to sale depot.
3.4.3.2: Exploitation of fire wood consists of two operations felling and billeting. Felling is done with axe. Billets of length 1.20m are prepared and stacked in to 2m x 1.2m size stacks. Firewood is sold at coupe site and normally converted into charcoal by the purchasers.

Charcoal manufacture is not allowed to do conversion in forest area. It has to be done in private land, duly approved from competent authority.

3.4.4.1:-Cost of exploitation:- Cost of exploitation is fixed by the committee headed by Conservator of Forests, South Chandrapur Forest Circle, Chandrapur as per the existing norms and minimum wage structure sanctioned by Government from time to time. It is revised every year. The average cost of exploitation, thus, depends upon the prevailing minimum wage. From July, 2003 the minimum wage for various works are being linked with dearness allowance. Dearness Allowance for the labourer is being revised half yearly, once in January and other in July. Accordingly minimum wage is revised.

SECTION –3.5: PAST AND CURRENT PRICES:-

3.5.1.1: Market conditions- For all kinds of forest produce there is great demand. Wide gap between supply and demand results into keen competition amongst the purchasers. All the timber species are in good demand and their rates are increasing day by day, same is the case with charcoal and other forest products. The details of past and current prices have been given in Volume II of this plan in appendix no XII.

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CHAPTER IV

IMPACT OF ACTIVITIES BY FOREST DEVELOPMENT CORPORATION OF MAHARASHTRA LIMITED (FDCM), IN THE TRACT

SECTION:4.1: CONSTITUTION OF FOREST DEVELOPMENT CORPORATION OF MAHARASHTRA LIMITED

4.1.1.1. Forest Development Corporation of Maharashtra Limited (An Undertaking of Maharashtra State) at Nagpur was constituted in 1974. Its aim was to convert and develop the under stocked and poor quality forest areas into productive forests by introducing valuable and production enhancing species. Presently, 16,122.186 ha of forest area in the tract is with Pranhita Project Division of FDCM at Allapalli. The range wise distribution of forest area in the tract under FDCM Limited Project Division Pranhita is given in Table No-7 in Chapter I of Part I of this plan. 5.8% of total forest area is under the management of FDCM Limited in this tract. The areas allotted to FDCM are in the form of clusters. These clusters are referred as Work Centers. Forests are mainly teak bearing forests. These forests were worked earlier in Conversion Working Circle. Forest type is mainly dry deciduous teak bearing forest.

4.1.1.2.: ACTIVITIES OF FDCM - Earlier FDCM used to work in Conversion Working Circle areas of Forest Department as an agency in clear felling , logging, transporting and marketing the forest produces and sharing the benefit on percentage fixed by the Government from time to time. But presently it is working totally independent of forest department on the areas given to it on lease basis. Separate Management Plan for the areas under it is prepared and duly sanctioned by competent authority through Central Chief Conservator of forests at Bhopal. Overwood removal of the forest areas and replanting with improved seedlings or nursery stock is presently being taken.

4.1.2.2. IMPACT OF FDCM - The areas under taken by FDCM had been successfully converted into very good teak stock. Not only that the teak population in the plant community has increased but also the productivity has increased many fold. The vegetal cover has increased. The studies conducted have revealed that in teak plantation diversity of species is maintained by the nature. Even wildlife dispersal in FDCM areas is equally heartening. No wildlife depletion is normally experienced. The impact on employment side is also appreciable as it is providing employment to local people on regular basis.

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CHAPTER V

IMPACT OF FIVE YEAR PLANS

SECTION:5.1. IMPACT OF FIVE YEAR PLANS ON ATTAINMENT OF MANAGEMENT OBJECTIVES

5.1.1.1:- Till 42nd Amendment to Constitution of India in 1976, Forest was a Subject of State List. State used to look upon forests as resources generating revenue to its exchequer. Maharashtra Government worked in that perspective. This division was one of the revenue generating division of the State. Forests were worked before independence on scientific line in consonance with prepared working plans/schemes. Emphasis was on improvement of forest and exploitation of the matured and valuable timber trees. After independence, ex-proprietary forests were also brought under the gambit of management. Wildlife was treated as source of recreation. Till late seventies of last century no plan fund was siphoned to forestry sector in the tract. Total forest area in the tract dealt with is to the tune of 88% of total geographical area and has presence of very dense forests. For meeting the requirements of locals for forest produce, the activities taken for social forestry is almost nil. Silvicultural operations in the tract were always at the top priority. Earlier forestry sector was the only sector providing the employment to the people. From early eighties of last century, Special Action Plan was initiated under Tribal Sub Plan. But the share for forestry development was still decimal. Being the remotest tract of the district, even plan was not prepared for development of forest from such component. Forestry remained the revenue generating machine. Only fuelling of machinery through Non Plan expenditure was done with meager plan resources. Even today percentage of Plan expenditure in the District is less than 5%. Forest Department shares its 7% revenue to Zilha Parishad for development of Forests through Zilha Parishad. But the development through Z.P. has been seldom done except construction of some roads and raising few plantations.

5.1.1.2:- FIRST FIVE YEAR PLAN (1951 to 1956) - First Five Year Plan aimed at rehabilitation of degraded forests, introduction of economic species, survey and demarcation. Sironcha Forest Division was not separate unit in this period. Also most of the new reserved forests and protected forests were not with the forest department, rather they were directly under then Aheri Jamindars. Aheri Jamindari Forests were brought to State under Indian Forest Act, 1927 and declared as Protected Forests under section-30. The impact of that Plan was not noticeable as flow of funding was never made available to the tract for requisite achievement. For the old reserved forests Shri M.T. Hussain`s plan was operative till 1953-54. Shri Dasputre`s plan operations started from 1954-55 onward. The prescriptions of these plans were implemented in most of the tract for which the plans pertained. Conversion of forests took place. The locals got employment and their economic growth got impetus of forward uplift to some extent.

5.1.1.3:- SECOND FIVE YEAR PLAN (1956-1961)- Just like 1st five year plan, 2nd five year plan aimed at rehabilitation of degraded forests, introduction of economic species, survey and demarcation. During that period the tract dealt was not having separate identity. Protected forests were annexed to forest department during that period. Dasputre`s plan for reserved forests and schemes for protected forests were implemented in the tract. The reserved forests were converted to the great extent. Protected forests were given the semblance of scientific management discarding the arbitrary management practices during jamindaries period. Forests and people both got developmental benefits.

5.1.1.4: THIRD FIVE YEAR PLAN (1961-1966): Third Five Year Plan aimed at increasing productivity of forests through fast growing species plantation, scientific assessments and modern logging. During that period Dashputre's plan for reserved forests and schemes under protected forests were in operations in the tract. The processes of reservation of protected forests to reserved forests was initiated. Forests lands were allowed to be given to villager for cultivation for getting agricultural crop. But fortunately the population being low no major impact of disforestation was felt here. Silvicultural operations were the main concern of management and due to that forest got improved particularly the protected forests. No plan expenditure was incurred. Operations were revenue oriented.

5.1.1.5: POST THIRD FIVE YEAR PLAN (1966-1969): Dashputre's plan for reserved forests and schemes for protected forests were in operations. The tract was under severe drought condition and people were reeling under deep poverty and the major concern was to provide work and civil amenities to the people. Foresters were compelled to follow the dictum of nature vis-a-vis people demand.

5.1.1.5:- FOURTH FIVE YEAR PLAN (1969-1974)- Just like 3rd Five Year Plan, 4th Five Year Plan aimed at increasing productivity of forests through fast growing species plantation, scientific assessments and modern logging. The existence of Sironcha Forest Division came into its earlier form i.e. in the name of South Chanda Forest Division. Dashputre`s plan was operative for reserved forests. For protected forests different schemes were in operations covering the different blocks. Forest Villages were brought under Revenue Department. New development in the field of forestry sector emerged in the form of Timber Board to divert the revenue for development of forests. Many successful plantations were raised during that period. No direct funding was made available from plan component.

5.1.1.6: FIFTH FIVE YEAR PLAN (1974 - 1979)- 5th Five Year Plan aimed at large scale plantation, social forestry and forest conservation. During that period forestry works were carried out as per Dashputre`s plan upto 1973-74 and Shri P.P. Joshi`s plan from 1974-75 for reserved forests and schemes for protected forests. During that period Forest Development Corporation of Maharashtra Limited Nagpur (An Under Taking of Maharashtra State) came into existence with objectives of improving the inferior forests into superior forests and enhancing the productivity of forests. FDCM was given forest areas in the tract for the management. Forest Department took various development activities for development of forests and raised successful plantations in converted areas. No plan fund was made available.

5.1.1.7: ANNUAL PLAN (1979 – 1980) AND SIXTH FIVE YEAR PLAN (1980 – 85) : The aim of 6th Five Year Plan was Social Forestry and fuelwood reserves to save natural forests. The tract is having 88% of total geographical area under very good forest cover. Hence, there was no dearth of fuel wood. Also there was no scope for Social Forestry in community land. The tract experienced the emergence of naxalism due to decision of State Government to regularise the encroachments upon forest land for the encroachers of encroachment for period from 1/4/1972 to 31/3/1978. That had created an atmosphere that encroachment on forest land is bound to be regularised in due course of time. It got tacit support of Naxalites. P P Joshi plan for reserved forests and schemes for protected forests were implemented. Due to naxalism forestry works got affected from time to time. Tract used to get direct funding from Tribal Sub Plan. But forestry sector did not get its due upto its potential. Not even 1% of total allocation of District was given to Forest.

5.1.1.8:- SEVENTH FIVE YEAR PLAN (1985-90): The basic aim of 7th Five Year Plan was forest conservation, massive afforestation and wasteland development. Tribal Sub Plan was providing funds to various developmental activities in the tract. Forestry sector share was dismal. No working plan was in operation. P.P. Joshi`s plan was extended upto 1986-87. Due to ban on tree felling, conversion activities got affected and discontinued. Working Plan was not in operation. Some plantations were taken in various plan schemes. But these were not successful. Forests got some rest and that lead to boosting of natural regeneration.

5.1.1.9:- EIGHTH FIVE YEAR PLAN (1992--1997): 8th Five Year Plan aimed at preservation of biological and genetic diversity (both flora and fauna), protection of forest against biotic interference, utilisation of wastelands, and promotion of people's participation through Joint Forest Management (JFM). During that period concept of Participatory Forest Protection through people participation started with Government resolution regarding that. World Bank Funded Forestry Projects were implemented to boost the infrastructures and enhance the productivity of forests. The consolidated working plan for entire forest areas of the tract was under operation. Naxalism started to show its ugly impact on the implementations of plan schemes. Even forestry activities were not allowed to be run smoothly. The real impact on the over all development was not achieved to the fullest extent due to unruly conditions and terror created by anti social elements.

5.1.1.10:- NINTH FIVE YEAR PLAN (1997 - 2002): Just like 8th FYP, 9th FYP aimed at preservation of biological and genetic diversity (both flora and fauna), protection of forest against biotic interference, utilisation of wastelands, and promotion of people's participation through Joint Forest Management (JFM).State government had started various schemes in consonance with central government schemes. World Bank Funding ended with plan period. Tract faced unparallel challenge from anti social elements in the form of unprecedented tree felling. Tract received little fund from plan source to achieve the objectives of plan. Forestry sector augmented through World Bank added Forestry Project.

5.1.1.11:- TENTH FIVE YEAR PLAN (2002-2007): Present Five Year Plan operations are on. The wave of Joint Forest Management in its various incarnations is now getting momentum in the tract. Though Forest Development Agency, a Central Government Added Project had been sanctioned, people are reluctant in Naxalite affected villages to come forward. Some people think that they will be forced to come out from their encroachment on forest land. Even they will be bound not to encroach upon forest land in future and they would be assisting the forests for no extra gains. They are already enjoying the benefit of forests without such activities. They do not feel any shortage of forest produce or compulsion to have forest protection. They appear to be getting full support from naxalites for not participating in JFM. Further more and more persons are finding illegal transaction of valuable timber removed from forests to the people across the state border more profitable. This activity has tacit support from naxalites. Assaulting of forest personnel, particularly, beat guards by the Naxalites is common. Thus the tract is experiencing a peculiar development which is against the long term objective of development. Even implementation of existing working plan or project prescriptions are not being allowed to be carried out in some areas by naxalites. To have greater impact on the socio - economic development, the people, the law enforcing and various developmental agencies must work in unison.

5.1.1.12. During preparation of National Forestry Action Programmes, it has been pointed out that basic purpose of the NFAP is to establish direct linkage between the national forest policy and the national five year plans. In the past there has not been a comprehensive and constant programme structure for forestry. Every plan has had its own

programme structure, so it was difficult to get linkages and establish trends. The percentage share of forestry sector outlay changed from 0.32 percent of the total outlay in First FYP to 0.94 percent in Eighth FYP. The highest allocation was in the Seventh FYP (1.09%). For the sustainable development of the sector, allocation to the forestry sector should be raised to about 4 to 5 percent of the total outlay of the country. Similarly, in the tract also, the plan allocation must be in conformity with national perspective to achieve objectives of the nation and forest.

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CHAPTER – VI

STAFF AND LABOUR SUPPLY

SECTION – 6.1: STAFF

6.1.1.1. Sironcha Forest Division at Allapalli (previously known as South Chanda Division) was created in 1966 when the then Chanda Forest Circle was reorganised. Administrative set of Sironcha Forest Division at Allapalli is as follows:

Name of Division:	Sironcha Forest Division at Allapalli.		
Forest Circle :	South Chandrapur at Chandrapur.		
Name of Forest Ranges:	1. Asarali	at Asarali	Tahsil: Sironcha.
	2. Dechali	at Dechali-Petha	Aheri.
	3. Jimalgatta	at Jimalgatta	Aheri.
	4. Kamalapur	at Kamalapur	Aheri.
	5. Pranhita	at Repanpalli	Aheri
	6. Sironcha	at Sironcha	Sironcha.

6.1.1.2: - The sanctioned and existing posts of officers/staffs in Sironcha Forest Division at Allapalli on 01-07-2004, is given in the following table.

Table No-12

TABLE SHOWING THE NUMBER OF POSTS AND THEIR POSITION

Sr №	**Name of Posts**	Permanent	Tempor ary	Total	Filled	Vaccant
					As on 01-07-04	
1	Deputy Conservator of Forests	1	0	1	1	0
2	Assistant Conservator of Forests	3	0	3	2	1
3	Range Forest Officers	9	5	14	12	2
4	Foresters	25	15	40	34	6
5	Forest Guards	123	59	182	170	12
6	Chief Accountant	1	0	1	1	0
7	Workshop Superintendent	1	0	1	0	1
8	Surveyor	2	0	2	1	1
9	Steno cum Typist	1	0	1	1	0
10	Clerk cum Typist	16	7	23	23	0
11	Driver	12	15	27	10	17
12	Mechanic	3	0	3	3	0
13	Auto Electrician	1	0	1	0	1
14	Welder	1	0	1	1	0
15	Fitter	1	0	1	0	1
16	Mahawat	3	0	3	0	3
17	Characutter	3	0	3	1	2
18	Daftari	1	0	1	1	0
19	Peon	5	0	5	5	0

20	Naik	1	0	1	1	0
21	Cleaner	10	12	22	14	8
22	Choukidar	5	1	6	6	0
23	Mali	1	1	2	2	0
Total		**229**	**215**	**344**	**289**	**55**

In addition to these personnel, division has following Van Majoor on establishment as supernumerary staffs and Temporary Van Mazoor as daily paid labourers.

1. Permanent Van Majoor: 68.
2. Temporary Van Majoor: 64.

Besides these, division has elephant on its establishment as follows:

1. Elephant (Adult/Subadult): 4.
2. Elephant (Calf) : 2.

6.1.1.3:- The Divisional Forest Officers/Deputy Conservator of Forests who have held the charge of Sironcha Forest Division at Allapalli are given in the Volume II in Appendix No-XXIV:

Table No-13

Table showing Divisional Forest Officers/ Deputy Conservator of Forests in charge of Division

Sr №	Name of the Officers (Shri)	Period	
		From	To
1	G M Chandras	27/7/1959	09/11/1960
2	P P Lele	10/11/1960	31/05/1961
3	A G Oak	01/08/1961	29/05/1964
4	S S Parasnis	30/05/1964	08/07/1964
5	N H Naik	09/07/1968	19/11/1969
6	B C Pal IFS	20/11/1969	25/12/1969
7	A N Ballal IFS	29/15/1969	18/08/1973
8	P D Kinninge	19/08/1973	28/07/1976
9	K Subramanian IFS	29/07/1976	12/06/1978
10	S N Bande	13/06/1978	03/07/1978
11	V T Patki IFS	04/07/1978	12/10/1981
12	Jwala Prasad IFS	13/10/1981	05/12/1981
13	D C Pant IFS	06/12/1981	21/01/1982
14	S W H Naqvi IFS	22/01/1982	16/08/1984
15	S R Dorle IFS	17/08/1984	02/12/1984
16	Shailendra Bahadur IFS	03/12/1984	01/07/1988
17	R N Biswas IFS	02/07/1988	22/12/1988
18	V K Sinha IFS	23/12/1988	06/12/1989
19	Navin Singh IFS	07/02/1989	11/06/1990
20	V K Sinha IFS	12/06/1990	29/10/1990
21	Anurag Chaudhary IFS	30/10/1990	01/06/1992
22	G R K Rao IFS	02/06/1992	08/06/1992
23	K Narsimhalu IFS	09/06/1992	23/12/1993
24	S S N Rao	24/12/1993	13/06/1993
25	Mohan Karnat IFS	14/06/1994	01/08/1994
26	N Vasudevan IFS	02/08/1994	09/08/1994

27	A N Khadase IFS	10/08/1994	15/09/1997
28	B S Thengadi IFS	16/09/1997	08/03/2000
29	V V Pardesi IFS	09/03/2000	10/03/2000
30	B S Huda IFS	11/03/2000	17/03/2000
31	Yashvir Singh IFS	18/03/2000	01/07/2003
32	Ramjee Singh Yadav IFS	02/07/2003	28/06/2004
33	A R Mande IFS	29/06/2004	28/07/2004
34	D V Shrikhande	29/07/2004	Present incumbent

SECTION –6.2 : LABOUR

6.2.1.1:- All developmental activities including important forestry operations depend on labour supply in adequate numbers and in time, so as to make the project in hand a success. Without adequate and timely supply of labour, forestry activities will be jeopardized to a great extent and especially in important areas like Sironcha Forest Division. There are two major sources of labour at present. Internal source is from the villages in the Sironcha Forest Division and external source is from outside the tract.

6.2.1.2:INTERNAL LABOUR:- Taking into consideration the then difficulties of working of these important and valuable forests, forest settlements in form of Forest Villages were purposely established in the Sironcha and Asarali ranges. In the earlier days, around 1895 onwards, forestry operations were few and simple and were restricted over a small part of the year and were unable to support the labour all around the year. Therefore, the labour was supplied with land for cultivation as an incentive for them to stay at site (villages) and as a measure of additional economic support. The inadequacy of labour available was felt as early as at the time of drafting of 1930 plan and necessity for increasing the number of forest villages was stressed accordingly. However, attempts to that affect yielded little success except during the early and middle thirties, when economic conditions were bad. On the other hand, the forestry works increased manifold and that naturally increased the pressure on the limited source of Forest Village labour. Further, the artificial regeneration operations coincide with the agricultural operations and dearth of labour is felt for planting. Carting season comes in conflict with the crop harvesting season of the local villages. But the population of the tract has increased many fold and the tract is under the grip of naxal activities. People are forced, sometimes, not to go on forestry works. It is reported that the villagers have to beg or bargain before naxalites for attending the forestry and other works.

6.2.1.3: EXTERNAL LABOUR:- During non-agricultural season, labour for forest works are available in adequate quantity. Acute shortage is however, felt for planting and weeding when the labour from villages gets locally employed for attractive wages for paddy transplanting, weeding and other agricultural operations. The tract is sparsely populated. *Gonds* and *Madias* form bulk of the unskilled labour in this tract.

6.3.1.1:REMUNERATION TO LABOURS:- There are 68 permanent Van Majoors who are getting facilities of permanency. Present minimum daily wage is linked with minimum wage and dearness allowances declared on sis monthly basis by the State Government. Casual workers are paid either on daily wage or on job basis.

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CHAPTER VII

PAST HISTORY OF MANAGEMENT

SECTION-7.1: GENERAL HISTORY OF FORESTS

7.1.1.1: The forests of Sironcha Division were formerly part of the Gond Kingdom of Chanda. In the year 1303 the area came under the Muslim rule, then under the domain of Telangana kings and again under Muslim rule of Delhi. In the year 1698, the area was donated to Shri Jagapati Rao. He was given full proprietary rights of the area. In 1822, British took over the area and in 1910 the area became part of the then Central Provinces and Berar. In 1956 reorganisation of States took place and the area was annexed to Bambay State. In 1960, it was included in Maharashtra State.

7.1.1.2: Reserved Forests: The forests of Asarali and Sironcha ranges were declared reserved forests in 1879. Area did not receive any scientific working between 1879 to 1918. Irregular selection fellings were carried out in Somanpalli and Kopela areas by communities and licensees. No attempts were made to improve the growing stock. The Jimalgatta and Korepalli blocks were merged with British Rule in 1903. In 1924, these areas (Jimalgatta and Korepalli Blocks) were declared as reserved forests.

7.1.1.3: Protected Forests:- In 1893, the Ex-Aheri Jamindari Estate descended to Bhujangrao, who proved to be incapable of managing the affairs of Estate and in 1902, the estate was taken over by Court of Wards for management. Under the Madhya Pradesh Abolition of Proprietary Rights Act, 1950, the Jamindari vested in the State Goverment and came under management of Forest Department and constituted as Protected Forests under Section 29 of Indian Forest Act, 1927 in 1955. Some of the remainning forest areas were also brought under Protected Forests under the ambit of Indian Forest Act 1927 during 1959 and 1960. Further under Section 4 of Indian Forest Act, 1927, the Government decided to constitute these protected forests as Reserved Forests in 1959. Under going various provisions of the said act (IFA, 1927); most of the protected areas were declared as Reserved Forests in 1992. Forest Settlement Officer left remaining protected forest areas to meet the local requirements.

7.1.1.4: Till 1960-61 these forests were managed without any systematic working system. Only valuable species were exploited from accessible areas.

SECTION-7.2: PAST SYSTEMS OF MANAGEMENT:

TRACT DEALT WITH IS DISCUSSED IN TWO DISTINCT AREAS.

BRITISH RAJ	FROM AHERI JAMINDARI
SIRONCHA BLOCK- VARIOUS NOTIFICATIONS: 1979 TO 1942 JIMALGATTA & KOREPALLI BLOCKS;1924 J CARR WP 1917-18 FOR SIRONCHA ANTHONY PLAN FOR JIMALGATTA & KOREPALLI BLOCK M T HUSSAIN PLAN 1927-28 to 1953-54 DASHPUTRE PLAN 1954-55 to 1968-69 EXTD to 1973-74 R.B.JOSHI PLAN 1974-75 to 1983-84 EXTD to 1986-87	PF IN 1955 & 1959, 1974, RF IN 1992. DECHALI BLOCK-P.P.JOSHI SCHEME 1961-62, B.P. DESAI SCHEME 1966-67 to 1975-76 EDRANGA & UMANUR BLOCKS- S.C. AGRWAL SCHEME 1956-57 to 1975-76 KAMALAPUR, DECHALI, JIMALGATTA & PRANHITA RANGES- M.B. MANKARE SCHEME- 1970-71 t0 1979-80 ASARALI & SIRONCHA RANGES- R. L. CHOUDHARI SCHEME 1965-66 to 1974-75

7.2.1. RESERVED FORESTS:

7.2.1.1: ASARALI AND SIRONCHA RANGES: Shri J Carr prepared the first Working Plan in the year 1917-18. The plan became operative in 1918. The areas were roughly stock-mapped on 4" = 1 mile scale The forests were divided into three main types: (i) Mixed and Teak Forests, (ii) Anjan Forests and(iii) Low Mixed Forests The first type contained four felling series, the second and third type contained three felling series each. In addition to it, one bamboo working circle with six cutting series and one grazing working circle were formed

7.2.1.2: The mixed and teak working circle were constituted around Somanpalli, Kopela and Gonta and extended towards the eastern boundary. The prescriptions of the working circle aimed at removal of tree growth over 150 cm girth over bark and cultural operations such as climber cutting, improvement in the younger crop and removal of the tree suppressing teak regeneration. However, the implementation could not be carried out satisfactorily. Even the later attempts to remove the past faults met with partial success. The forests in the northwest region i.e. around the villages Chikela, Parasewada and Darasewada, were constituted to form coppice with standard felling series with 30 years rotation. 30 standards were prescribed to be retained. This system could not show satisfactory results and it was soon replaced by the improvement felling. Actually, the working came out to be of light intensity and the resulting crop was found congested as majority of the areas remained unworked. Only teak was removed.

7.2.1.3: The Anjan working circle had three felling series and was constituted around Chittur, Golangundam, Sirkonda and the area to the east of Jhinganoor. The prescriptions pertained to selection felling with a felling cycle of 20 years. In majority of the areas, patches were worked.

7.2.1.4: The grazing working circle was constituted in the poor areas along the riverbanks and the mixed forests to the north of Tumnur. The forests of Kopela and Somanpalli were excluded from this working circle. In the areas of Anjan Working Circle grazing was strictly regulated.

7.2.2. Shri M.T.Hussain's Plan (1927-38 to 1953-54)

7.2.2.1: Shri MTHussain prepared a plan for the reserved forests of Dhaba, Markhanda, Ghot and Sironcha. During this plan, the forests were stock mapped on 4" = 1 mile topo sheets. The forests were classified as: (i) The Plain Teak Forests, (ii) the Hill Teak Forests, (iii) Mixed Forests and (iv) Bamboo Forests. The plan constituted four working circle viz. (i) The Conversion working Circle,(ii) The improvement working circle, (iii) The Miscellaneous working Circle, and (iv) The bamboo overlapping Working Circle.

7.2.2.2: Conversion Working Circle: Conversion to uniform system was applied to the plain teak forests around Somanpali, Kopela and Jinganoor. Similarly the forests around Chikela, Tumnur and Parasewada were worked under the conversion to uniform system. The system introduced intensive working involving clear felling in the teak bearing areas and improvement felling in the remaining areas. Greater stress was given on the existing natural regeneration. Artificial regeneration to supplement the natural regeneration was

carried out on a very small scale. Four felling series were formed involving area of 23524 hectares the conversion period for Kopela and Somanpalli felling series was kept at 80 years aiming at 150 cm girth over bark For Chikela and Tumnur felling series the conversion period was fixed at 60 years aiming at 105 cm girth over bark. Kopela and Somanpalli felling series had common PB I area while areas to PB II, PB III, & PB IV were not allotted but the areas left out were grouped under separate unallotted block, one for each of the felling series while PB II and PB III were grouped together as unallotted blocks one for each one of the felling series.

7.2.2.3: In periodic block I, clear felling was prescribed in the area where natural regeneration was profuse Heavy improvement felling favoring teak was prescribed and the removal of marketable species and thinning in favour of these species were also prescribed In the unallotted blocks cultural operations and thinning were prescribed in the old regenerated patches Over the rest of the area removal of the dead trees and thinning in favor of teak and other valuable species were prescribed In Chikela and Tumnur felling series 50% of the teak trees over 120 cm girth over bark were directed to be removed to remove congestion.

7.2.2.4: Improvement Working Circle: The workable hilly areas were included in this working circle with a single felling series viz Amdeli, felling were prescribed The selection girth was prescribed according to the site quality classes They were 135 cm for II Site Quality, 105 cm for III Site Quality and 75 cm for IV Site Quality girth over bark. The prescriptions aimed at the removal of the dead and dying trees, removal of selection girth trees which were not required on silvicultural grounds, heavy thinning in favour of teak and semal, cutting back of suppressed and malformed teak advance growth, removal of miscellaneous trees and bamboo interferring with young teak and semal and the clearing of the growth in the area where teak regeneration was profuse.

7.2.2.5: Miscellaneous Working Circle: Miscellaneous forests of poor quality and forest village areas constituted this working circle. No scientific treatment was prescribed Only the removal of teak and other marketable produce were allowed along with the exploitation of the adjoining areas Timber trees, occurring in the forest village areas, were to be retained as reserved trees However, if the coupes in the other areas happen to be poor, the reserved trees were prescribed to be removed

7.2.2.6:Bamboo (overlapping)Working Circle: The areas with substantive bamboo growth were included in this working circle 4 years felling cycle was prescribed Standard cutting rules were prescribed

7.2.3.1: Jimalgatta and Korepalli Blocks: In the early years, the forests were subjected to shifting cultivation and heavy irregular exploitation in 1902 the Aheri Zamindari was placed under the Court of Ward. Shifting cultivation was discontinued but the irregular exploitation continued unabated The first working plan was drawn up by Shri Anthony in 1916.

7.2.3.2: Shri Anthony's plan formed three felling series under improvement working circle with 20 years felling cycle In 1927 transition fellings were prescribed with no definite rules to improve and to encourage teak regeneration Cultural operations were carried out on small scale Mature teak was exploited

7.2.3.3: M.T.Hussain formed Conversion and Improvement Working Circle The conversion period was kept at 10 years and the felling cycle for the improvement working circle was kept at 20 years Periodic blocks I and II were definite while the remaining area was included in the unallotted block The hilly areas were classed as miscellaneous working circle and were kept unworked

7.2.3.4: Conversion Working Circle: The Working Circle contained three felling series viz(i) Jimalgatta, (ii) Karancha and iii) Chandra Periodic blocks I and II were clearly defined while the remaining areas were included in unallotted blocks, clear felling and regeneration by natural means, in Jimalgatta felling series, had produced excellent teak pole crop. However tall grass has invaded the areas, the teak regeneration had been found suppressed In the Karancha felling series the system was not found suitable as grassy blanks have developed after clear felling.

7.2.3.5:Improvement Working Circle: The forests around Enkabanda were allotted to this working circle with one felling series The treatment prescribed was mainly selection fellings with light thinnings in the young crop Cultural operations were not carried out satisfactorily.

7.2.3.6: Miscellaneous Working Circle: In this working circle 18485 hectares of Korepalli and Jimalgatta blocks were included No scientific working was prescribed However irregular exploitation was suggested depending upon the local demands for nistar and paidawar.

7.2.3.7: Grazing: During Shri Anthony's Plan all the worked areas used to remain closed to grazing for period of five years after felling Shri M.T.Hussain continued the same in his plan also The areas were not therefore classified and hence not divided into grazing units.

7.2.4.Dashputre's Plan (1954-55 to 1968-69)

7.2.4.1: Sironcha Forests: Shri Dashputre revised Shri MTHussain's plan in 1954-55. The forests were stock mapped in detail. Depending upon nature of soil, topography and past treatment, the forest were divided into two types: (i) Mixed Teak Forests and (ii) Mixed Miscellaneous Forests The following working circles were formed

(i)	The Conversion Working circle	10,601.6 ha
(ii)	The Selection-Cum-Improvement WC	35,350.8 ha
(iii)	The coppice with Reserved WC	3,005.2 ha
(iv)	The Miscellaneous Working Circle	31,061.2 ha
(v)	The Bamboo (Overlapping) WC	24,426.0 ha
(vi)	The Semal (Overlapping) WC	17,817.6 ha

7.2.4.2: Conversion working circle: The Conversion Working Circle was formed of the plain Teak Mixed Forests around Kopela, Somanpalli, Jinganoor and Kistyapalli. Two felling series were formed viz, (I) Somanpalli and (ii) Kopela 120 years was fixed as the Conversion period with six periodic blocks of 20 years each. The method of regeneration was natural where natural reproduction was prescribed and elsewhere artificial The yield was regulated by area

7.2.4.3:.PERIODIC BLOCK I: Area with adequate teak regeneration and advance growth were to be clear felled reserving a few well grown poles of miscellaneous species Thinnings were to be carried out in retained teak pole patches. Better quality areas not infested with Imperata grass and other weeds and in which teak regeneration was inadequate, were to be planted up with teak and other valuable miscellaneous species. In the unregenerated areas, where teak advance growth has now established were to be opened up.

7.2.4.4: PERIODIC BLOCK II: It included removal of dead trees and inferior trees in the lower canopy interfering with the reproduction of valuable species.

7.2.4.5: PERIODIC BLOCK III: Light thinnings in favour of valuable species and selection fellings of 1/3 of the mature trees if available silviculturally.

7.2.4.6: PERIODIC BOCK IV & V: Silvicultural thinnings, improvement fellings and selection felling of 2/3 rd of the mature marketable trees if available silviculturally.

7.2.4.7: PERIODIC BLOCK VI: Areas not regenerated in the past, which are fit to be regenerated naturally, were to be regenerated by removal of the shelterwood and cutting back of malformed advance growth. Thinnings were to be carried out in the regenerated areas in the 7^{th} and 15^{th} year.

7.2.4.8: Selection Cum Improvement Working Circle: All the remaining good and mixed quality areas in the plains as well as in the hills were grouped to form Selection cum Improvement Working Circle. The area around Parasewada, Chikela, Sirkonda, Amdeli, Chittur, Nandigaon, Tumnur, Asaralli, Patagudam and Kistyapalli, were included in this working circle. Nine felling series, five regular and four provisional, were formed 20 years was the felling cycle. Selection cum Improvement felling were prescribed. The method of regeneration was natural Yield was regulated by area and the future yield was safeguarded by retaining ½ of the exploitable marketable trees, if available silviculturally. Semal was reserved in all the areas. The selection girth prescribed was, teak 153 cm (5 ft) for II and III site quality areas and 120 cm (4ft) girth for lower site quality areas. Inferior trees and bamboo interfering with promising stems of marketable species and shelter wood of inferior species were prescribed to be felled. In the subsidiary cultural operation cutting back of valuable growth, damaged during the fellings was prescribed.

7.2.4.9: Coppice with Reserve Working Circle: All poor quality areas around big villages viz, Sironcha, Asarali, Ankisha and Tekda were constituted to form this working circle. Three provisional felling series were formed viz Rompalli, Marrigudam and Golagudam Coppice with Reserve system was applied. The rotation period fixed was 45 years. The yield was regulated by area. All semal trees were reserved. Areas on steep slopes, areas under erosion, understocked patches, important nala banks and trees bearing edible flowers and fruits, advance growth of other species except that of garari upto 23 cm girth (9") were served against fellings. Sound straight poles of teak and miscellaneous marketable species were to be reserved to the extent of 75 poles per hectares. Patches of immature growth were to be thinned. The rest of the growth was to be felled. The subsidiary cultural operations included clear felling of bamboo two years in advance of the main felling in Marrigudam felling series. Cutting back of malformed growth, cutting of damaged reserved trees, removal of inferior trees and bamboo and thinning at half of the rotation age, were prescribed.

7.2.4.10: Miscellaneous Working Circle: This working circle included inaccessible and remote forests. Forests which were unworkable due to poor stocking, forest villages, were also included in this working circle. No regular working was prescribed.

7.2.4.11: Bamboo (overlapping) Working Circle: All good areas were included. The system was selection system. Four years felling cycle was prescribed. The yield was regulated by area. Two commercial and four nistar felling series were formed. The felling rules included retention of culms under one year, retention of eight culms over one year and removal of dead bamboos.

7.2.4.12: Semal (overlapping) Working Circle: All the areas with appreciable semal trees were included in this working circle. Trees over 135 cm (45") girth were to be removed if available silviculturally. Selection system was applied with 20 years as the felling cycle. The yield was regulated by area.

7.2.5.1: Joshi's Plan 1974-75 to 1983-84 This was a revision of Dashputre's Plan. Areas extending, over 1,170.357 square kilometer included were reserved forests of Asarali, Sironcha and Jimalgatta, Korepalli Blocks. The distribution of area allotted to various working circles in each range were as given in the following table –

Table No-14
Table showing the area distribution by R.B.Joshi.

Sr No	Working Circle	Asarali	Dechali	Jimalgatta	Kamlapur	Sironcha	Total
1	PWC	---	--	529.335	---	12,848.625	13,377.960
2	CWC	11,454.62	---	4,684.230	1,307.745	---	17,446.590
3	SCIWC	7,905.195	4,938.98	886.140	1,377.205	886.140	5,2640.590
4	CWRWC	2,886.435	---	---	----	2,751.165	5,637.600
5	MWC	6,369.435	---	---	2,952.165	10,243.665	19,565.550
6	B(O)WC	2,777.895	---	7,178.830	----	23,337.060	33,329.785
7	K(O)WC	---	----	8,891.370	,146.335	---	14,037.705
8	S(O)WC	940.815	1,155.87	7,211.430	----	1,6628.672	25,936.787

NOTE:- Areas given in acres
PWC= Protection Working Circle.
CWC = Conversion Working Circle.
SCIWC = Selection Cum Improvement Working Circle.
CWRWC = Coppice With Reserve Working Circle.
MWC = Miscellaneous Working Circle.
B(O)WC = Bamboo (Overlapping) Working Circle.
K(O)WC = Khair (Overlapping) Working Circle.
S(O)WC = Semal (Overlapping) Working Circle.

7.2.5.2: Protection Working Circle: Hilly slopes over 25º situated to north of Enkabanda and Karancha villages of Jimalgatta Range, hilly region to the north of Rompalli-Jhinganoor tract, denuded plains of Nandigaon, Chittur villages of Sironcha range and denuded areas between villages Kopella and Patagudam of Asarali range were included in this working circle. Where growing stock of miscellaneous species of site

quality IV to III and density 04 to 05 existed. Treatment prescribed was complete rest to forests.

7.2.5.3:Conversion Working Circle: Good quality areas of teak and miscellaneous forests of Asarali range around Somanpalli, Jhinganoor, Kopella, Kistayapalli, Jimalgatta and Korepalli blocks were included. Teak varied from 15% to 30% in the crop with density 0.6 to 0.8, main species like *ain, bija, haldu, dhaora.* Five periodic blocks with 20 years period followed definitely were formed. In PBI mature stock was to be clear felled and planted artificially, giving scope to reserve and tending natural regeneration. In PBII, areas were with crop nearing maturity. Attempts to conserve existing growing stock by improving the hygiene were to be followed. In PBIII, the crop was irregular. Tending of middle aged crop, removal of part of mature crop (retaining 60% mature trees) were the prescriptions. In PB IV, the crop was to be thinned, heavily. In PB V, the regenerated area was to be thinned. Choice of species rested with teak. Rotation of 100 years for exploitable girth of 140 cm was fixed. 3 felling series Kopela, Somanpalli and Jimalgatta were formed. Allotment of areas to PB was not proportionate. Exploitation was to be done by departmental agency. Yield was to be regulated by area.

7.2.5.4: Selection Cum Improvement Working Circle: Areas of Chikela, Bejurpalli, Mudewahi, Sirkonda, Ahmedali, Tumnur, Karanchan, Enkabanda, and Raspalli with *teak* and miscellaneous crop were included in this working circle *Teak, ain, dhaora, bija, tinsa, tendu, garari* formed main species. Bamboo were intermixed with site quality III and II areas and density 0.6 to 0.8. Selection working was prescribed. Felling cycle of 20 years was given. Choice of species rested with *teak, bija, ain haldu, tinsa, karam, dhaora, lendia.* 12 felling series were formed and yield was regulated by area. ½ of the trees of exploitable size were to be extracted. Thinnings in young crop were also prescribed.

7.2.5.5: Coppice With Reserve Working Circle: This working circle included areas around thickly populated villages, viz Tekda, Bejurpalli, Sirkonda, Marrigudam, Asarali, Ankisha. Forests capable of producing small sized timber, firewood were to be worked under coppice with reserve system. Crop of site quality IV to III consisted of density 0.4 to 0.7 and species *ain, dhaora, bija, garari, bhirra, achar, tendu, rohan and khirni*. Bamboos in rare quantity formed understorey in Marrigudam village. Treatment consisted fixing rotation of 45 years, regulating yield by area, to be worked by departmental agency. Cleaning and subsidiary silvicultural operations were also prescribed.

7.2.5.6: Miscellaneous Working Circle: The areas along high slopes, understocked, isolated or scattered were included in this working circle. Density of the miscellaneous crop varied from 0.4 to 0.5 with site quality IV and species like *ain, bhirra, khair, tendu* constituted the crop. No working was prescribed, however, forest villages were to derive their domestic requirements from these areas.

7.2.5.7: Bamboo (Overlapping) Working Circle: The area bearing good bamboo growth near Enkabanda, Karancha, Motakpalli, Chittur, Nandigaon, Mudewahi, Georgepetha and Yenlaya villages were grouped into 4 nistar and 4 commercial felling series and worked in 3 years felling cycle by department or nistarees in nistar felling series and Ballarpur Paper Mills in commercial felling series during the lease period. Felling rules consisted of retention of current years' shoots, and 8 young shoots at a minimum.

7.2.5.8: Khair (Overlapping) Working Circle: The areas overlapping SCI WC, Teak Plantation Working Circle and Miscellaneous Working Circle bearing *khair*, in exploitable proportion were included. One felling series was formed with exploitable girth 60 cm and felling cycle of 20 years. Agency of exploitation was to be decided by Conservator of Forests, Chanda Circle. Yield was regulated by area.

7.2.5.9: Semal (Overlapping) Working Circle: This circle included overlapping SCI, CWR and Miscellaneous Working Circle. Areas having good semal growth was constituted to exploit semal for industrial requirements. Exploitation girth was fixed at 105 cm. The exploitation was to be done by department and the harvested semal logs were to be handed over to WIMCO. Yield was to be regulated by area and two felling series were formed.

7.2.6: Protected Forests:

7.2.6: Exproprietary forests of Dechali Block - Past systems of management

7.2.6.1: In origin the Jamindaries appear to have been feudal grants made with the object of settling and keeping some sort of order in parts too remote and difficult for the ready exercise of the Sovereign's direct authority. No documents survive to show the terms of the original grants and the traditions of the ruling families are singularly meagre. It seems that neither the Gond nor the Maratha soveriegns recognised any proprietory title to the soil on the part of the Jamindars and there were instances that Jamindars were made and unmade at the pleasure of Rajah. Each Jamindars was assessed to do a small tribute and was bound to furnish a contingent of men at arms when required, and if he complied with these conditions, he was doubtlessly left pretty much to his own devices.

7.2.6.2: Aheri Zamindari is said too have been granted six centuries ago to Mansu Bapu, an ancestor of the present Jamindars by one of the Gond Rajahs of Chanda, on condition of reclaiming land, extending cultivation and maintaining security of life and property, particularly against the inroads of dacoits from Nizam's dominion. In the days of Bhimrao or Venkatrao (there appears some doubt about the correct name) who succeeded Koksha (1702-69) and held the Zamindari from 1770 to 1818 that the Jamindari is supposed to have expanded to its present limits.

7.2.6.3: It was not till the year 1893, when the Chanda Distict came under the British Rule, the legal position in respect of proprietorship of the Jamindar over the forests was questioned and his title there to had been admitted only conditionally, subject to the law of succession, loyalty and good administration

7.2.6.4: In 1893, the estate descended to Bhujangrao, who proved to be incapable of managing the affairs of the estate and in 1902, the estate was taken over for management by Court of Wards.

7.2.6.5: Under the provisions of the Madhya Pradesh Abolition of proprietary Rights (Estates, Mahals and Alienated Lands) Act 1950 (1 of 1951) the Jamindaries vested in State Government, and these forest areas were placed under the management of Forest "Protected Forests " under section 29 of the Indian Forest Act of 1927 (XVI of 1927) in 1955. Further under section 4 of the Indian Forest Act of 1927) and its application to Vidharba region of the State of Bambay, the Govt of Bombay have declared their intention to constitute these areas as reserved forests after completion of the inquiries into the rights

over these forests by the Forest Settlement Officer. Most of these areas were declared as Reserved Forests in 1992. Remaining areas are still Protected Forest left by FSO to meet the requirement of the locals.

7.2.6.6: Till 1960-61 the forests in this tract were not managed under any systematic or silvicultural basis. Prior to 1951 Jamindari have recklessly exploited and disposed off most of the big sized marketable species especially *teak (Tectona grandis) bija (Pterocarpus marsupium) ain (Terminalia tomentosa)* and *semal (Bombax malabarica)* from the accessible areas so as to replenish their dwindling finances. This reckless exploitation had resulted in preponderance of younger age classes of valuable species forming an admixture with mature and overmature age classes of inferior species as *mahua (Madhuca latifolia), tendu (Diospyros melanoxylon)* etc.

7.2.6.7: The result was that most of the saleable growing stocks had been removed from the accessible areas while in the forests in the remote localities incidence of over mature unsound stock was considerable. Adverse effects of lack of tending were seen everywhere. In both cases no tending was done. The mode of felling resorted to in the past had given rise to pollard shoots which were malformed The situation was worse around the villages and cultivations. The resulting coppice shown here die back every year due to the incessant fires and heavy grazing. The interior inaccessible localities hade by and large remains untapped.

7.2.6.8:The 1960-61 Working Scheme of Shri P.P.Joshi: This was the first scheme drawn up and introduced in 1960-61. The scheme was prepared without stockmapping the forests. No growth data was collected. The area tackled was as followed:

1.	Tonder FS	31,927 acre
2.	Kolamarka FS	20,784 acre.
3.	Dechali FS	22,879 acre.
	Total	75,590 acre.

A felling cycle of 30 years was prescribed. A long felling cycle with less number of felling series had resulted in large coupe areas Further neither annual area to be worked nor the sequence of compartments to be worked every year were laid out The method of calculation of yield by number of trees based only on the results of the partial enumerations (2.5%, 5%) carried out under the Survey of Forest Resources Scheme was not precise. The growth data of Allapalli Forests was adopted as the basis and further arbitrary reduction were made to calculated the yield, recruitment of the trees from II for the approach class(4' - 5' girth class) so, I class (5' & up) had only been taken into account. That resulted in high rate of procurement which lead to greater yield. In addition, to assuming this high rate of recruitment the proposed liquidation of surplus stock of trees of class I over a short period of 10 years would lead to abnormal inflation of the yield for a period of 10 years and probably a steep fall in the yield in subsequent years, since only a small portion of the growing stock had been taken into account while regulation of the yield. All these had reflected in actual working, the extensive coupe areas had to be divided into two or more parts to make them workable. Further the areas that were gone over were very inaccessible areas and in later period of working would had been difficult if not impossible due to inaccessibility.

7.2.6.9:The 1966-67 to 1975-76 Working Scheme of Shri B.P.Desai: Shri B.P.Desai's scheme of this area was the first attempt to bring the area under systematic management with period from 1966-67 to 1975-76. Total area of this block of 318.30 square kilometer in 90 compartments was to be managed under following working circles:

Table No-15
Table showing the area distribution by B.P.Desai.

SrNo	Name of working circle	Area in ha
1	Selection Cum Improvement Working Circle	24435.28
2	Plantation Working Circle	2430.94
3	Minor Forest Working Circle	3649.86
4	Khair (Overlapping) Working Circle	19712.65
5	Bamboo (Overlapping) Working Circle	22137.92
6	**Total**	**310.30 sq km**

7.2.6.10:Selection Cum Improvement Working Circle: Areas around Garewada, Dodgir, Asli, Maralpur, Kolamarka consisting of *teak* and miscellaneous crop of species like *ain, bija, lendia, tendu, moyein, haldu, semal, salai, chichwa* of site quality I to III and density 0.4 to 0.6 distributed into 5 felling series of Dechali, Dodgir, Kolarmarka, Kamalapur and Tonder were constituted in this working circle. The aim was at producing large sized timber under selection-cum-improvement system. Exploitable girth fixed for species were- *teak, ain, haldu, bija, shisham, semal* –150 cms; *siwan, tinsa* 120 cm, *bhirra*, *dhaora*, *tendu* – 90 cm *garari* 45 cm. Rotation was fixed 120 years and felling cycle of 20 years, regulating yield by area and exploiting only of the total number of exploitable trees available silviculturally. Choice of species was *teak, bija, ain, shisham, semal, haldu, tinsa, siwan, salai, dhaora, tendu, bhirra and lendia* to be worked as per orders of Conservator of Forests, Chanda Circle. *Khair* plantations by artificial regeneration over 5 acres were prescribed annually. Subsidiary silvicultural operations like climber cutting, improvement fellings, cleaning and thinning were also prescribed.

7.2.6.11: Teak Plantation Working Circle: Gentle hill steps with well drained areas of Dechali, Todka, Asli, Dodgir, Kolamarka and Garewada were selected for this working circle. Vegetation comprised of miscellaneous species like *ain, bija, lendia, dhaora*, *tendu, moyein, haldu, kusum, karam and teak* in every low proportion. Understorey comprised of *bamboo, garari, surya, achar dhaman, kumbhi, baranga, aonla, parad* with density 0.4 to 0.6 and site quality I to III. 11 compartments were allotted to this working circle. Divided into 4 felling series viz Dechali Plantation felling series, Dodgir Plantation series, Kolamarka Plantation felling series and Tonder Plantation felling series to be managed under special objects of management of (i) converting miscellaneous forests into teak forests and (ii) counter balancing the paucity of the recruitment of valuable species in the high quality forests. Area was stockmapped. Silvicultural system adopted was clear felling of 8090 ha annually and planting with *teak* at 2m x 2m. Intervening unsuitable patches were to be worked under selection-cum-improvement fellings. A felling cycle of 20 years was prescribed and yield regulated by area (annual coupe per felling series admeasured to 20.23 ha = 50 acres). Working was to be done by the departmental agency or as decided by the Conservator of Forests, Chanda Circle, choice of species rested with *teak*. Shri Desai prescribed the working by preparing treatment map classifying the area into workable, unworkable areas and areas unfit for *teak* plantation. In areas of artificial regeneration, retaining of fruit trees, vigorous and well formed trees of *shisham, bija,*

haldu like valuable species and thinning in congested groups were prescribed. Subsidiary silvicultural operations like thinning, cleaning, climber cutting were also prescribed with fire and grazing control over 7 years.

7.2.6.12: Minor Forest Working Circle: Forest around the cultivation and occupied areas were included in this working circle. These forests were in use for nistar requirement for the villages. Ex Madhya Pradesh Government regulated the nistar zones vide memo of Land Reforms Department's No 1336-1606-XXVIII, dated 19/06/1953 which was taken as a basis in forming this working circle. The vegetation comprised of miscellaneous species of site quality III to IV(a) with varying density (0.4 to 0.6). *Teak* was rarely found and confined along water courses. Other species like *ain, bija, dhaora, hiwar, anjan* were common. These forests received considerable damage in the past. 29 compartments were allotted too this working circle divided into 16 felling series. Each nistar zone constituted a felling series to be managed for objects- (i) to provide nistar material to local villagers, (ii) to prevent indiscriminate felling of trees for nistar all over the forest area and (iii) to implement Ex MP Govt directives contained in Land Reforms Department's memo No 2396 - 2389 XXVIII, dated 16/10/1956. The area was stockmapped, no enumeration were carried out. Forests were to be managed under Coppice With Reserve system on a rotation of 20 years with yield regulated by area. No coupes were laid down, only area of annual cut of nistar were prescribed. Agency of exploitaion was to be fixed by the Conservator of Forests, Chanda Circle. In order of priority the choice of species was *ain, dhaora, garari, bhirra, se*mal. Fruit trees and advance growth were to be reserved. While marking, the areas workable and unworkable were to be classified. Healthy reserves upto 24″ gbh of species *teak, ain, shisham, bija*, *shivan, dhaoda*, *haldu* and *surya* were to be selected to the extent of 75 trees/ha. Other prescriptions were (i) thinning in patches with pole crop, (ii) clear felling of garari and (iii) climber cutting. Subsidiary silvicultural operations comprised of cutting back operation in the year following main felling which included (i) climber cutting (ii) cutting badly damaged reserves, (iii) cutting back of malformed advance growth , (iv) cutting back of inferior species and bamboos competing with resultant coppice shoots and (v) cutting back of all standing trees marked for felling but not felled. Cleanings in 6^{th} year were also prescribed. Fire and grazing control were also to be exercises for 7 years. Exercise of nistar rights over the remaining area were closed under section 30 of Indian Forest Act, 1927. Alternate sources of nistar suggested were (i) from current coupes under SCI WC, (ii) nistar material obtained from clearing compartment lines, coupe lines and road alignment etc.

7.2.6.13: Bamboo (Overlapping) Working Circle: These areas overlapped SCI plantation and minor forest working circle areas, which carried bamboos in exploitable proportions. 69 compartments distributed into 6 felling series were to be worked for objects- (i) to exploit bamboos on scientific lines, (ii) to meet nistar requirements of local populations and (iii) to meet commercial demand of Ballarpur Paper Pulp and Straw Board Industry. A felling cycle was fixed for 4 years. Each felling series was divided into 4 coupes. One of which was to be extracted annually. Exploitation was to be done by rules like (i) not to exploit any clump having less than 10 culms, (ii) fellings not to be carried out from 15^{th} June to 15^{th} September,(iii) not to fell a culm below 2 years, (iv) not to leave crooked, twisted, malformed bamboos, (v) cutting the culm between 6" to 18" from the ground level, (vi) not to dig out rhizome, (vii) spacing out the culms in a clump etc.

7.2.6.14: Khair (Overlapping) Working Circle: The areas overlapped SCI and Minor Forest Working Circle where khair was found in good proportion. Khair was found widely distributed in all girth classes over the area in good proportion and profused regeneration. Trees of exploitable size were capable of yielding kattha in commercial quantity. 56 compartments were found to be carrying khair which were grouped into one felling series to manage for (I) exploiting all silviculturally available khair trees of exploitable size of 60 cm gob on scientific line and (ii) to meet requirement of kattha industries. All the area was stockmapped and enumerated. Silvicultural system adopted was selection system fixing exploitable girth (ob) of 60cm under 20 years felling cycle and yield regulated by area and to be worked by the agency to be decided by the Conservator of Forests, Chanda Circle.

7.2.7:Exproprietary Forests of Sironcha and Asarali Ranges

7.2.7.1: Past systems of management and their results: Before the abolition of proprietary rights, the exploitation of these forests was solely governed by revenue consideration and no regard was paid to the silvicultural requirements of forests. *Teak, ain, bija, haldu, shisham and semal* were exploited recklessly by the private lessees and contractors No data of exploitation was left over. Due to this type of felling the resultant crop was irregular, deficient in mature superior species. After the abolition of proprietary rights the nistar rights of people as laid down in the village nistar patrak regarding small timber and fuel were recognized by the government and rules were framed governing the extraction of the produce. In the protected forests as declared in 1955 under section 29 of Indian Forest Act 1927, an enquiry into the existing rights of the villages of these forests was carried out for each of the village and recorded into nistar patrak of that village by the Nistar Officer. In addition, the government framed rules under sections 30 and 32 of IFA 1927 for initial protection and management of these forests without abridging the existing rights of the people on these forests. The effect was that a certain measures of protection were afforded to more economically important species like *teak, bija, semal, haldu, shisham* which the nistaries were not allowed to remove. The Jamindar did not carry out any works of improvement. Some skeleton staff was appointed to protect the forest against illicit cutting and fire.

7.2.7.2: The 1965-66 to 1974-75 Scheme of Shri R L Chaudhari: Shri R L Choudhari drafted first working scheme for these forests for years 1965-66 to 1974-75. These forests covered 51 villages and an area of 3450 hectare. The prescriptions laid down by Shri Choudhari constituted only one working circle i.e. Minor Forest Working Circle**.** The forests belonged to inferior site quality i.e. of IVa and IVb with density 0.4 to 0.6 and miscellaneous growth mainly with *teak* of crooked and malformed nature having scanty regeneration. Each nistar zone was constituted into one felling series and one village formed one compartment. Main objects of management were – (1) to get maximum obtainable yield of small and medium sized timber, poles and firewood, (2) to provide fodder and grazing facilities to villagers with proper conservation forests, (3) to check soil erosion by maintaining vegetative cover in areas liable to erosion and (4) to prevent indiscriminate felling for nistar over all forest area. All the area was stockmapped. Silvicultural system adopted was coppice with reserve system. Choice of species in order of preference was *teak, bija, semal, shisham, haldu, ain, tendu, dhaora and lendia*; with rotation of 20 years ,and yield regulated by area fixing annual coupe area at one twentieth part of each felling series. Agency of exploitation was to be Gram Panchayat, Gram Sabha or Nistar Panchayat. This arrangement could be altered by the Conservator of

Forests. The coupe was to be demarcated by forest one year in advance of felling; unworkable area were excluded from working, patches of fully stocked young crop were to be thinned, all healthy fruit bearing trees were to be reserved from felling. Other trees reserved from felling were (1) advance growth upto 9" at bhob (except garari),(2) trees required for protection of soil or as seed bearers,(3) 40 well grown poles per acre of 12″to 18 ″ girth of *teak* and other valuable species. Cutting of high stumps and pollard shoots, cutting back operations, cleaning in 6th year, fire and grazing protection upto 5 years were other regulations and closing the area of nistar rights for remaining period of felling cycle.

7.2.8.1: Ex-Aheri Jamindari Forests of South Chanda Division: Umanoor and Edranga blocks : Past system of management and its results: The forests were subjected to shifting cultivation and selection fellings. In 1902 the Aheri estate was placed under the Court of wards, shifting cultivation was stopped. Heavy exploitation continued up to 1916. A working plan covering part of the Estate was prepared by Shri Anthony for an area of 18825 acres of Gatta block. This block was treated under SCI working. There was no systematic management in other blocks and selective felling continued.

7.2.8.2: The 1956-57 to 1975-76 Shri S C Agrawal`s Scheme : Shri S C Agrawal prepared a Working Scheme for the part of Ex-Aheri Jamindari Forests of the South and East Chanda Division for a period from 1956-57 to 1975-76. The area covered under this scheme comprised of Umanoor block and Edranga block of Repanpalli (Present Jimalgatta Range) range of South Chanda Division spread into compartment No246 to 268 i.e. for an area of 6288.81 ha. Edranga felling series contained *teak* in good proportion of site quality IV to III. Associates like *ain, mowai, dhaora, dhaman, khair, tendu, bhirra, ghont etc, Katang* bamboo occurred in dense thickets along nala banks. Crop of middle age predominated. Repeated fires and unsystematic exploitation in the past resulted in to unsound and malformed growing stock. The treatment prescribed was selection cum improvement fellings, choice of species in order of preference was *teak, ain, bija, shisham, haldu, tinsa, siwan, dhaora, bhirra and garari*. Species like *salai, baranga, kakad, mowai* etc were also regarded for preferential treatment along with fruit bearing trees. 20 years felling cycle was fixed and yield was to be regulated by areas restricting felling of 50% of the available trees of and over exploitable girth limit. Exploitation was to be done by Contractor's agency and subjected to alteration by the DFO while subsidiary silvicultural operations were to be carried out departmentally. Exploitable girth fixed was 4' gob for species other than *garari* (for which it was 1`6") *Semal* was to be exploited one year in advance of main felling if permitted by the Conservator of Forests. Unworkable areas like erodable areas, understocked areas, areas along nala banks etc were to be excluded from felling. All *semal* trees, *khair* trees were to be reserved from felling. *Teak* plantation to an extent of 10 to 20 acres in suitable areas of site quality III in each year's coupe was recommended. In those areas all *semal* and *khair* trees were to be reserved Planting was to be done at 6'x 6'. Subsidiary cultural operations prescribed were –(1) operation prescribed but not carried out by the contractor, (2) cutting of bamboo interfering valuable trees species, (3) cutting back of valuable trees damaged during main felling. Weeding and thinning in plantation patches were also recommended.

7.2.9.1: Ex-proprietory Forests of Kamalapur, Pranhita, Dechali and Jimalgatta Ranges of tract: Past system of management and their results: These forests were managed unsystematically and recklessly. Jamindar disposed off big size marketable species like *teak, bija, ain semal* from the accessible areas which resulted into sparse mature class of valuable trees in the stock and an admixture with over mature class of

inferior species as *mahua, anjan, tendu.* Adverse effect of lack of tending were seen every where. Pollarded shoots with malformed growth, die back for coppice shoots due to fires and untapped inaccessible areas were also the common sites. No special works of improvement were carried out.

7.2.9.2: The 1970-71 to 1979-80 Shri M B Mankare`s Scheme: Working scheme for the Ex-proprietary Forests of Kamalapur, Pranhita, Dechali and Jimalgatta Ranges of South Chanda Division for the years 1970-71 to 1979-80 by Shri M.B. Mankare was prepared for an area of 733.154 sq. km The area assigned to various working circles was under:

Table No-16
Table showing the area distribution by M.B.Mankare.

Sr No	Working Circle	Area (in hectare)
1	Protection Working Circle	969.628
2	Selection cum Improvement Working Circle	56337.470
3	Teak Plantation Working Circle	4696.381
4	Minor Forest Working Circle	11311.944
5	Khair (Overlapping) Working Circle	5751.813
6	Bamboo(Overlapping) Working Circle	1909.910
7	**Total**	**73315.423**

7.2.9.3: Protection Working Circle: Deolmari block having miscellaneous forests of inferior species with poor density and quality due to erosion required protection from soil conservation point of view. Selection fellings in the past and repeated fires, over grazing were the main causes. Site quality IVa areas having growth of *salai, anjan dhaora, moyein, semal, ain kulu, khair* etc with grassy blanks and other bushy growth were to be treated for improving site conditions for better forest growth, improvement of moisture and therefore no kind of working was prescribed.

7.2.9.4: Teak Plantation Working Circle: The areas of selected continuous patches bearing good quality miscellaneous forest situated in accessible areas on lower well-drained, gentle hill slopes and plains on the either site of Allapalli- Sironcha road admeasuring 4696.380 ha were covered under this working circle. Site quality of III to II and density 0.5 to 0.6 had *teak* with *ain, bija, dhaora, surya, achar, dhaman, papra, kumbhi, baranga* etc with scanty regeneration. Treatment prescribed was to convert miscellaneous forests into teak forests and to replenish the paucity of the recruitment of teak in the forests. Silvicultural system adopted was clear felling and planting with teak at the rate of 300 acres per year (net plantable area). Intervening unsuitable patches were to be treated under selection cum improvement working if exceeded 5 acres in extent. Choice of species was with teak. There were 3 planting sections viz Rajaram (Kamalapur Range with 7 compartments), Repanpalli (Pranhita Range with 11 compartments) and Loha (Dechali Range with 5 compartments). Yield was to be regulated by area. Agency of exploitation was fixed to be departmental agency or as decided by Conservator of Forests, Chanda Circle. The treatment contained demarcation of coupe and preparation of treatment map by gazetted officer showing (1) areas unfit for working (2) areas were to be worked under SCI system while the remaining area was to be clear felled and planted at 2m x 2m spacing. 20 annual coupes were laid down in each planting section. Weedings, cleaning and thinning were also prescribed in plantation areas followed by fire and grazing control for 7 years, terminating nistar rights.

7.2.9.5: Selecion Cum Improvement Working Circle: About 76% area of the scheme was covered under this working circle having vegetation of miscellaneous type with species like *teak* (in varying proportion), *ain, bija, lendia, dhaora, tendu, moyein, haldu, kusum, mahua, semal, karam and shisham.* In drier slopes *anjan, salai, kulu and chichwa* also were seen. Density varied from 0.4 to 0.6 and site quality III mostly and II rarely. Bamboos were absent except in shady patches. Teak occurred near Deolmari, Katepalli, Karneli and Watra. Special objects of management were (1) to harvest mature marketable species, (2) to improve condition of growing stock, (3) to bring about soil and water conservation, (4) to obtain sustained annual supply of large sized timber of economically important species. Felling cycle of 20 years and formation of 8 felling series were the prescriptions with choice of species being *teak, ain, bija, shisham, semal, haldu, tinsa, siwan, salai, dhaora, tendu, bhirra and lendia.* Yield was to be regulated by area restricting the proportion of exploitable trees to 50% of exploitable and above size trees under the silvicultural system of selection-cum-improvement. Exploitation girth was fixed for *teak, ain, haldu, bija, shisham and semal* 135 cm at bhob for *siwan, tinsa* - 120 cm bhob *bhirra, dhaora, tendu* and others - 90 cm bhob and for *garari* 45 cm bhob. Demarcation and marking following classifying area into unworkable, workable patches and cultivation areas were to be shown on treatment map. Improvement fellings were to be carried out first and then the selection fellings. Thinning in young congested pole crop was also prescribed. Fire and grazing control for 7 years formed miscellaneous regulations.

7.2.9.6: Minor Forest Working Circle: Forest around the cultivation and occupied areas were carved out for nistar regulations published by Government, from time to time. Total area covered was as followed:

Forest area	6797.34 ha
Occupied area	4514.60 ha
Total area	11311.94 ha

Distributed in 80 compartments mostly in plains having miscellaneous growth of species like *ain, bija, dhaora, bhirra, hiwar, garari, tendu, aonla, moyein, lendia* etc with *teak* in rare proportion. Site quality of the crop varied from IV to III and density 0.4 o 0.6. The objects of management were (1) to prevent discriminate fellings of trees for nistar all over the forest areas and to minimise the damage to the forests, (2) to implement the government directives regarding nistar. Treatment consisted of fixing felling cycle of 20 years and rotation of 100 years, under selection cum improvement working, choice of species as suitable for nistar being *ain, dhaora, garari, bhirra, teak* and fruit trees were to be reserved. 25 nistar zones were formed each constituting a felling series and yield regulated by area. Agency of exploitation was to be departmental agency or as decided by the conservator of Forests, Chanda Circle. Marking rules consisted of classifying areas into workable, unworkable areas. In workable areas prescriptions were retention of fruit trees, advance growth up to 9" (22 cm) girth at bhob, removal of 1 out of 3 trees of exploitable size and climber cutting. No coupes were laid down. Each nistar zone was divided into 20 equal annual coupes. Subsidiary silvicultural operations like cutting back operation followed by protection against fire and grazing and regulating the nistar rights were to be followed.

7.2.9.7: *Khair* (Overlapping) Working Circle: This working circle overlapped areas of SCI working circle, *teak* plantation working circle and minor forest working circle, where khair was found in good proportion. *Khair* trees were found in all girth classes out of which 10% were crooked and malformed. Special object of management was (1) to exploit silviculturally available khair trees on scientific lines to meet the demand of Kattha industry. Choice of species was *khair* under selection system . Felling cycle was fixed at 20 years and only one felling series was formed. Yield was regulated by area controlled by Brandis method. Exploitable girth was fixed at 60 cm gbhob fixing the removable no of trees per annum at 6600.

7.2.9.8: Bamboo (Overlapping) Working Circle: This working circle had very limited extent. One commercial felling series was formed. Felling was aimed at (1) exploiting bamboo on scientific lines (2) to meet nistar demand of local people for bamboo, (3) to utilize bamboo potential of the area by supplying bamboo to paper Mill. Agency of exploitation under selection working in case of commercial felling series was to be decided by the Conservator of Forests, Chanda Circle, and in case of nistar felling series it would be nistarees. Felling cycle of 3 years was prescribed. Felling rules as per Desai's scheme were prescribed.

7.2.10: SHRI A. P. DESHMUKH'S WORKING PLAN (1991-92 to 2000-2001)

7.2.10.1: Shri A. P. Deshmukh's Plan for Sironcha Forest Division is the first working plan covering the entire forest areas under the working of Forest Department excluding the areas handed over or earmarked for FDCM. The areas allocated to different working circles are as follows:

Table No-17
Table showing the area distribution by A.P.Deshmukh.

Sr No	Working Circle	Area (in hectare)
1	Protection Working Circle	14,348.340
2	Selection cum Improvement Working Circle	137,582.814
3	Improvement Working Circle	51,492.344
4	Miscellaneous Working Circle	28,711.304
5	Wildlife (Overlapping) Working Circle	Entire area
6	Bamboo(Overlapping) Working Circle	55,256.459
7	Minor Forest Produce Working Circle	Entire area
8	**Total**	**232,134.802**

This working plan covered 2321.348 square kilometer of forest areas including both reserved and protected forest areas of Sironcha Forest Division in the Gadchiroli District under South Chandrapur Forest Circle, Chandrapur. The general objects of management of this plan were:

(1) To preserve forests on steep slopes and openly stocked areas to check soil erosion.
(2) To conserve existing natural forests.
(3) To restock the understocked and degraded areas.
(4) To give priority to local demand for forest produce.
(5) To increase production of MFP.
(6) To create grass reserves in heavily populated areas.
(7) To ensure maximum sustained yield.

In order to achieve the above objectives following working circles were constituted;

7.2.10.2: Protection Working Circle: This working circle covered hilly areas having steep and precipitous slopes above 25 degrees. Total areas included in this working circle was 14348.340 ha under 8 felling series. No felling was prescribed Soil conservation measures were prescribed in the eroded areas sowing of seeds and bush planting of species like *neem, maharukh, salai, dhaoda, sitaphal* etc were prescribed in the understocked areas.

7.2.10.3: Selection Cum Improvement Working Circle: This working circle comprised of compartments having crop density more than 0.4. The silvicultural system was selection cum improvement fellings. The harvestable girth over bark at breast height for *teak, bija, shisham, tinsa, ain, haldu, kalamb, shivan*, was 120 cm. For *dhaoda*, *bhirra, garari, khair* it was 75 cm. The felling cycle was 20 years. The yield was regulated by area and Brandis method as modified by Sagreiya formula was adopted to reach the yield. 60 felling series with 20 years felling cycle comprising forest areas of the extent to 1,37,582.814 hectare was allocated to this working circle. The improvement fellings were confined in patches containing predominantly pre selection and exploitable trees. The method of regeneration emphasised on natural regeneration. However, planting was to be done in the understocked areas. The subsidiary cultural operation included cutting back operations immediately after main fellings, cleaning in the 6^{th} and 11^{th} year and no thinning was prescribed. The areas were to be protected from fire and grazing for a period of 7 years.

7.2.10.4: Improvement Working Circle: This working circle included areas of nistar felling series, B class reserved forests and areas which were not under working for a long time. The crop consisted of site quality IV and density above 0.4. The main objects of this working circle was to increase the proportion of valuable tree species in the growing stock by planting and tending, to arrest the soil erosion, to preserve and improve the composition and density of the crop and to meet the local demands in the form of nistar. The silviculture system was improvement fellings. Choice of species in the order of priority was *teak, ain, bija, shisham, haldu, dhaoda, lendia, mowai*, etc. 25 felling series with felling cycle of 20 years consisting of 51,492.344 ha of forests areas was prescribed under it. Working was to be carried out after preparation of a detail treatment map showing protection areas, unworkable areas and workable areas. Climber cutting, removal of congestion in young pole crop, felling of dead, dying, diseased and malformed trees depending upon the silvicultural availability was to be carried out in workable areas. Plantation was to be raised with local and fast growing species in open patches. Subsidiary silvicultural operations like cutting back operations, cleaning, climber cutting, and thinning in old plantations was to be carried out. Fire protection and grazing was to be controlled up to 7 years.

7.2.10.5: Miscellaneous Working Circle: The areas under FDCM control or earmarked for FDCM, Forest Villages, under encroachment, Forest Depot, Central Nurseries, Forest colonies, nalas and river beds etc were carved out under this working circle. No regular working was prescribed for these areas.

7.2.10.6: Bamboo (Overlapping) and Underplanting Working Circle: This working circle comprised of 17 felling series The silviculture system adopted was selection system of mature bamboos. The felling cycle of 3 years was prescribed. The normal bamboo

felling rules were followed. The bamboo seedlings were to be underplanted at a spacing of 6 m X 6 m in pits of sizes of 45 cm³.

7.2.10.7: Wildlife and Nature Conservation Working Circle: This working circle covered entire area of the Sironcha Forest Division and aimed at conservation and management of wild life.

7.2.10.8: Minor Forest Produce (Overlapping) Working Circle: This working circle was prescribed as an overlapping working circle comprising of entire area of Sironcha Forest Division with a view of development of MFP. The main MFPs include *bamboo*, *tendu*, *myrobalans*, *moha*, flowers and fruits, gum, *dikamali*, and *nirmali* fruits.

7.2.10.9: Grazing Control: The forests were divided into grazing units to which villages were listed for grazing their cattle The number of cattle from each village that was to be permitted for grazing was not fixed. The grazing settlement had not been done.

7.3:SECTION: RESULTS OF PAST WORKING:

7.3.1.1: Selection Cum Improvement Working Circle: A. P. Deshmukh` s working plan dealt mainly with selection cum improvement working circle. The aim was to have maximum production of big timber without hampering the growing stock and its regeneration. The timber aspect was more or less realized as and when department was allowed to work without hindrance from anti social elements (Naxalites). But the follow up operations were seldom done leaving the crop at the mercy of nature. The regeneration is found to be adequate in remote areas and scanty near the village settlements. Barring the areas where organized illicit felling of valuable teak and other trees was carried out by anti social elements and the areas brought under cultivations the regeneration is satisfactory. Out of 60 felling series under this working circle, the working was not done in more than 25 to 30 coupes in a year. That also depended upon the mood of naxalites. Even these coupes were not of the same felling series each year. It depended on the whims of Naxalites.

7.3.1.2: In **protection working circle** the works to be carried out included to give rest to crop and to protect soil and moisture regime. But the crop bore the burnt of organised illicit felling on large scale in patches. Otherwise the remaining crop is in good condition.

7.3.1.3: In **improvement working circle** the prescription of removal of dead dying trees was seldom followed. But the rest given to the crop is excellent as some of the area was found fit to be included in SCIWC.

7.3.1.4: In **bamboo(overlapping) working circle** the prescriptions of working plan were not followed up as the felling of bamboo was not allowed to be carried out due to naxal activities and hence the crop remained untreated. Even Ballarpur Paper Mill withdrew its working from the tract due to anti social activities of people with following of naxalites.The remaining crop is of congested clumps and needs regular removal of culms.

7.3.1.5: In **wildlife (overlapping) working circle**, nothing specific regarding wildlife management had been carried out. The number of wildlife species is on decline. Earlier tiger, panther, bison , were found in good number over wide tracts. Their number is declining. Because their sighting is not as frequent as in the past. The herd of cheetal, wild

boar are found but with less frequency. Due to vast continuous forest of miscellaneous species and long tract of perennial rivers, good number of wild animals are found even now.

7.3.1.6: In Minor Forest Produce (overlapping) Working Circle no specific management was done except the removal of minor forest produces by forest dwellers and their disposal through Tribal Development Corporation. No processing or value added works were carried out to enhance the income of the people. The tract is rich in non wood forest produces and that is to be harnessed to optimum extent without hampering the biodiversity and sustainability. In that way the dependence of people on timber and timber activities will be reduced and management of forests would truly happen.

7.3.1.7: In **Miscellaneous Working Circle,** 23844.268 ha forest was handed over or earmarked for Forest Development of Maharashtra Limited (an Undertaking of Maharashtra Government). No prescription was given to these areas. It was envisaged that these areas will be covered under management of FDCM in respective Project Division. Out of these area only 16122.186 ha is under FDCM for which management plan had been sanctioned by competent authority. Remaining area is with Forest Department . These areas have been covered for specific management in current working plan prescriptions.

SECTION-5.4:- REGULATION OF GRAZING IN THE FORESTS

7.4.1: Reserved Forests :

7.4.1.1: During the working plan of Shri Dashputre, systematic grazing policy was brought in According to the Forest Policy, the Government resolution vide No 3952-2626 dated 10-12-1952, the areas were classified into protection forests, tree forests, minor forests ,pasture lands and miscellaneous forests consisting of grass reserves Prescribed grazing incidence was :-

- ⇨ Protection Forests- No grazing,
- ⇨ Tree Forests-3 acres (1.2 ha) per cattle unit,
- ⇨ Minor Forests – 2 acres (0.8 ha) per cattle unit,
- ⇨ Miscellaneous - No grazing,
- ⇨ Pasture land – 1 acre (0.4 ha) per cattle unit.

7.4.1.2: In Shri R B Joshi's Plan the grazing was to be regulated as under Conversion working circle. PBI coupes to remain closed for grazing for 10 years of felling and in other PBs the grazing was to be closed for 5 years. In selection cum improvement working and in CWR working circle also it was to remain closed for 5 years from year of working. Sheep and goats were prohibited in A class forests.

7.4.2:Protected Forests:

7.4.2.1: Shri Agrawal's scheme, in SCI working circle coupes were closed for grazing for 5 years. No grazing control was envisaged in Shri Choudhari' scheme. While in Shri Mankare' scheme, in the wake of Government resolution No MFP1365/132211-Y dated 6/12/1968 and with effect from 1/7/1969 forests were classified on functional basis into Pprotection forests, Tree Forests, Minor Forests, Pasture lands and Grass Reserves and grazing incidence was prescribed at number of grazing unit basis. The grazing fees was also prescribed at the rates of Rs 2.0 to 0.50 per unit depending upon the type of cattle. Same were the prescriptions in Shri Desai's scheme.

7.4.3.1: No grazing rule was prepared after Shri A P Deshmukh`s plan which was covering the entire tract in the consideration. But the grazing was allowed as per Government Resolution in unclosed areas on the permit basis. Comparatively the cattle population in the tract is less compared to 268000 carrying capacity of forest 256000 cattle unit present and not evenly distributed. Around the densely habitated tract where the cattle population is also high, the grazing impact is very high. But the grazing impact in area away from village is considerably negligible which is reflected in the regeneration of forest. Regeneration in such areas is satisfactory. But around densely populated areas it is alarming.

SECTION-7.5:- REGULATION OF FIRE IN THE FORESTS:

7.5.1.1: The tract is prone to recurring fire incidences in forests. The mention of the need for protection of forests from fire, is testimony of that. But the fortunate aspect is that fire is seldom deliberate and early pre monsoon break in the tract saves the grace of forests from have badly affected from fire hazards. Nevertheless, the tract needs constant protection from recurrence of fires and protecting the diverse forest wealth for posterity.

SECTION-7.6:- SPECIAL WORKS OF IMPROVEMENT UNDERTAKEN:

7.6.1.1: Following special works of improvement were taken in the past:

(a) Cultural operations:- Thinnings, cutting back operations, climber cutting, cleaning.
(b) Fire protection.
(c) Protection from illicit cutting, transport and encroachment.
(d) Construction of roads, buildings, wells, *vantalis, khodtalis*, continuous contour trenches, *anicuts* etc.
(e) Plantations and afforestation.

7.6.1.2: The working plan of the area is not under operation from 2000-2001. No regular felling of trees under plan scheme is in progress except the removal of windfallen material and illicitly felled material. The removal for various forest produce in last plan operation years is given in the following table.

Table No-18

TABLE SHOWING THE PRODUCTION OF TIMBER & FUEL BEATS

Sr. No.	Year	Total Coupes	Worked Coupes	Quantity Timber in cubic metre & Fuel in beats		Revenue in Rupees.	
				Timber	Firewood	Timber	Firewood
1	1993-94	85	67	7896.53	15948	13,32,01,588.	17,22,410.
2	1994-95	85	68	8732.01	21091	11,61,54,926.	54,40,619.
3	1995-96	85	58	7703.03	15700.75	6,6,71,634.	57,20,041.
4	1996-97	85	37	4141.29	7898	10,78,98,775.	45,10,706.
5	1997-98	85	11	2154.66	5327	8,20,81,664.	49,9,948.
6	1998-99	85	37	2834.35	8492.75	5,12,1,8421.	25,40,234.
7	1999-2000	85	38	2956.78	6929.5	5,16,05,086.	18,51,246.
8	2000-01	85	25	1592.31	2842.5	5,38,03,070.	27,42,575.
9	2001-02	No plan was in operation		2894.67	1671.5	7,94,90,226.	17,38,282.
10	2002-03			2523.95	1851.25	3,67,29,005.	7,17,146.
11	2003-04			2662.86	1170.25	2,41,13,287.	3,06,903.

The inference is clear that due to naxal activities several coupes could not be worked in the past. Yearwise break up is as follows:

Table No-19
Table showing the coupes worked during A.P.Deshmukh Plan Period.

Year	No of coupes	No of coupes worked	No of coupes not worked.
1993-94	85	67	22
1994-95	85	68	17
1995-96	85	58	27
1996-97	85	37	48
1997-98	85	11	76
1998-99	85	37	48
1999-2000	85	38	47
2000-01	85	25	60

7.6.1.3:TENDU LEAVES: Tendu Leaves collection in the tract is an annual phenomenon. *Tendu* leaves are used as wrapper for *Bidi*. The quality of Tendu leaves in the tract is of highest quality in Maharashtra. The demand for these leaves are in great in the market. It is offered to licensees to pluck and disposed of these leaves on year basis. The period of collection is from April to May each year. State receives revenue in the form of royalty and pluckers and processors get handsome wages. It is boon for locals as they get handsome amount in short period. No collection was done in 2003 season as no one came forward to get the license for plucking and removal of *tendu* leaves due to naxalite threat. Notified yield of Division is approximately 53000 standard bags. One standard bag contains 1000 *pudas*. Each *puda* contains 70 leaves on average.

Table No-20

TABLE-SHOWING THE PRODUCTION AND REVENUE:

SrNo	Year	Yield in std bag(1000)	Royalty in Rs(Lakhs)
1	1991-1992	81	206
2	1992-1993	105	267
3	1993-1994	41	139
4	1994-1995	49	242
5	1995-1996	51	231
6	1996-1997	51	237
7	1997-1998	50	168
8	1998-1999	45	214
9	1999-2000	57	301
10	2000-2001	56	338
11	2001-2002	52	277
12	2002-2003	55	224
13	2003-2004	Not auctioned due naxalite threat.	
14	2004-2005	27	77 Partially auctioned.

Bamboo: Ballarpur Paper Mill (BILT) worked in the tract for bamboo in the plan operation period. Even Government of India sanctioned for removal of bamboo, no bamboo was removed as no one came forward to get the license for cutting and removal of bamboo during 2001-2002 to 2002-2003. Ms Nav Durga Bamboo Craft Gadchiroli has entered into Agreement with Government of Maharashtra for removal of 10,000 ADMT bamboo from 2003-2004 for ten years. For 2003-2004 the offer was for 2000 ADMT. The potential for bamboo removal in the tract is approximately 12000 Air Dried Metric Tonnes (ADMT).

Table No-21

TABLE SHOWING THE REMOVAL OF BAMBOO IN PREVIOUS PLAN PERIOD:

Sr.No.	Year	Bundles	M.T.	Revenue(Rs)
1	2	3	4	5
1	1993-94	365638	6014.002	3,201,855
2	1994-95	490281	7590.58	4,445,325
3	1995-96	696529	10743.877	6,921,248
4	1996-97	430485	6213.279	4,402,853
5	1997-98	644907	9496.484	7,543,015
6	1998-99	618788	9369.59	8,031,211
7	1999-2000	496829	7369.546	6,950,830
8	2000-2001	566488	8427.424	8,743,436
9	2001-2002	0	0	0
10	2002-2003	0	0	0
11	2003-2004	101100	365.51	254,623

Other minor forest produces: The tract dealt with comes under monopoly of Tribal Development Corporation of Maharashtra State for collection and disposal of minor forest produces other than *tendu* leaves, *apta* leaves and bamboo. The exact collection has not been conveyed to division.

SECTION-7.7:- PAST REVENUE / EXPENDITURES:

7.7.1.1: In previous years revenue realized in various forestry activities and expenditure incurred are given in the following table:

Table No-22

Table showing past expenditure and revenue.

Sr №	Year	Expenditure in rupee	Revenue in rupee
1	1993-94	2,49,82,801.	16,23,67,975.
2	1994-95	2,49,19,800.	14,91,14,373.
3	1995-96	2,82,36,971.	10,30,41,599.
4	1996-97	3,31,83,704.	13,36,38,276.
5	1997-98	3,32,78,337.	11,60,82,256.
6	1998-1999	3,31,01,301.	9,18,45,148.
7	1999-2000	4,17,34,696.	9,41,83,537.
8	2000-2001	3,41,25,509.	9,61,46,464.
9	2001-2002	3,16,94,817.	10,45,31,989.
10	2002-2003	3,03,01,961.	3,74,46,151.
11	2003-2004	3,23,33,319	4,31,74,868

7.7.1.2: As per 1988 National Forest Policy of Government of India forests are not to be looked upon as the revenue generating natural resources, the main thrust of management has shifted from revenue generation to conservation of natural resources for posterity. Hence the revenue from forests are not the main concern now.

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CHAPTER – VIII

STATISTICS OF GROWTH AND YIELD

SECTION –8.1: STATISTICS OF RATE OF GROWTH OF TEAK

8.1.1.1: GROWTH OF *TEAK* : The studies had been conducted by the office of the Conservator of Forests, Working Plan No2,Chandrapur in the year 2004 with the help of its officers and staffs. *Teak* trees of All India Teak Site Qualities I, II, III and IV from Asarali, Sironcha, Jimalgatta , Dechali, Pranhita and Kamalapur forest ranges were selected and Stem analysis was conducted. The results so obtained have been computed and utilised for this plan report.

8.1.1.2: Data for GBH(OB) in centimeter, Height in meter, Volume in cubic meter, cai (current annual increment), mai (mean annual increment) are produced in the following tables:

STEM ANALYSIS FOR TEAK SITE QUALITY _I

Forest Division : Sironcha
Range : Asarali
Round : Kopela
Beat : Kopela
Compartment No. : AA297
Date of Felling : 08-01-2005
Team Leader : Shri M B Jawade Range Forest Officer Working Plan Division, Chandrapur-2

Table No-23

Table showing the result of stem analysis : Teak Site Quality- I

SrNo	Age (year)	GBH(OB) cm	Height m	Volume m^3	cai m^3	mai m^3
1	10	45	15.1	0.0027	0.00027	0.00027
2	20	82	22.3	0.0800	0.00773	0.00400
3	30	117	27.2	0.2000	0.01200	0.00667
4	40	148	30.5	0.3400	0.01400	0.00850
5	50	173	32.8	0.6400	0.03000	0.01280
6	60	190	34.6	1.0000	0.03600	0.01667
7	70	204	36.2	1.3600	0.03600	0.01943
8	80	217	38.4	1.7400	0.03800	0.02175
9	90	228	39.2	2.1200	0.03800	0.02356
10	100	237	39.7	2.4800	0.03600	0.02480
11	110	242	40.2	2.7000	0.02200	0.02455
12	120	245	40.5	2.8800	0.01800	0.02400
13	130	247	40.7	3.0400	0.01600	0.02338

Table No-24

Table showing the result of stem analysis- age -volume : Teak Site Quality- I

Age	Volume
10	0.0027
20	0.0800
30	0.2000
40	0.3400
50	0.6400
60	1.0000
70	1.3600
80	1.7400
90	2.1200
100	2.4800
110	2.7000
120	2.8800
130	3.0400

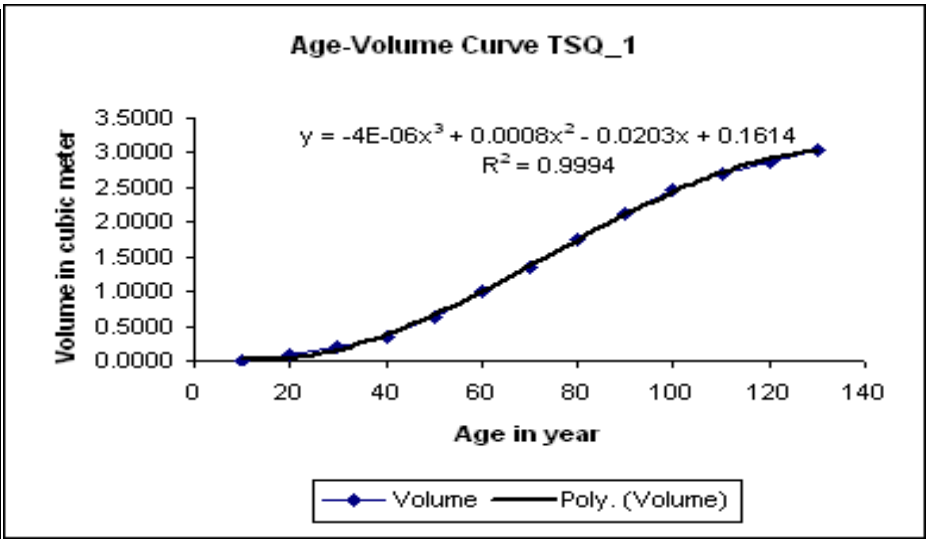
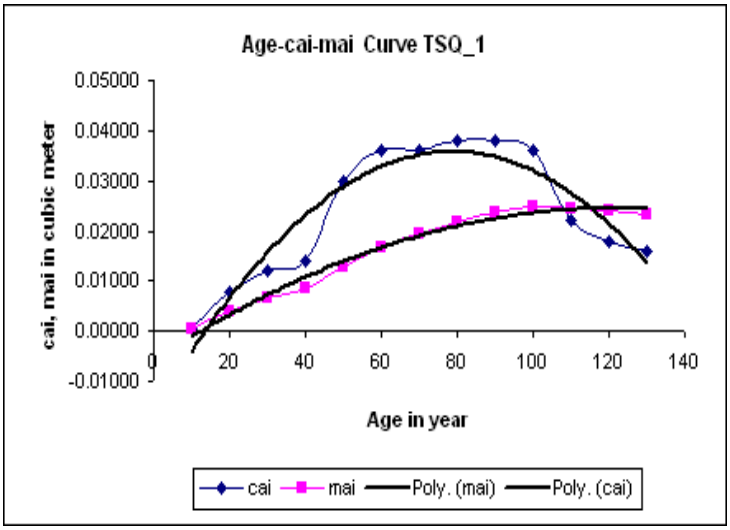


Table No-25

Table showing the result of stem analysis cai-mai : Teak Site Quality- I

Age	cai	mai
10	0.00027	0.00027
20	0.00773	0.00400
30	0.01200	0.00667
40	0.01400	0.00850
50	0.03000	0.01280
60	0.03600	0.01667
70	0.03600	0.01943
80	0.03800	0.02175
90	0.03800	0.02356
100	0.03600	0.02480
110	0.02200	0.02455
120	0.01800	0.02400
130	0.01600	0.02338



cai and mai meet each other at 108 years corresponds to gbh 240 cm and mai = 0.0246 m^3/tree.

Table No-26

Table showing result of stem analysis: Teak Site Quality II

STEM ANALYSIS FOR TEAK OF SITE QUALITY II
Compartment No:- DA029.
Range;- Dechali; Round:- Kishtapur; Beat:- Kishtapur.
Date of Felling:- 14-12-2004
Team Leader:- Shri M. B. Jawade, Range Forest Officer, Working Plan Chandrapur-2

SrNo	Age in year	GBH(OB) cm	Height m	Volume m^3	cai m^3	mai m^3
1	10	35	12.1	0.020	0.00200	0.00200
2	20	59	17.8	0.072	0.00520	0.00360
3	30	83	21.5	0.210	0.01380	0.00700
4	40	105	24.2	0.435	0.02250	0.01088
5	50	122	26.3	0.654	0.02190	0.01308
6	60	139	27.8	0.965	0.03110	0.01608
7	70	152	29.3	1.285	0.03200	0.01836
8	80	165	30.8	1.580	0.02950	0.01975
9	90	177	31.6	1.880	0.03000	0.02089
10	100	186	32.2	2.120	0.02400	0.02120
11	110	195	32.6	2.275	0.01550	0.02068
12	120	203	32.9	2.405	0.01300	0.02004

Table No-27

Table showing result of stem analysis-age-volume: Teak Site Quality II

Age	Volume
10	0.0200
20	0.0720
30	0.2100
40	0.4350
50	0.6540
60	0.9650
70	1.2850
80	1.5800
90	1.8800
100	2.1200
110	2.2750
120	2.4050

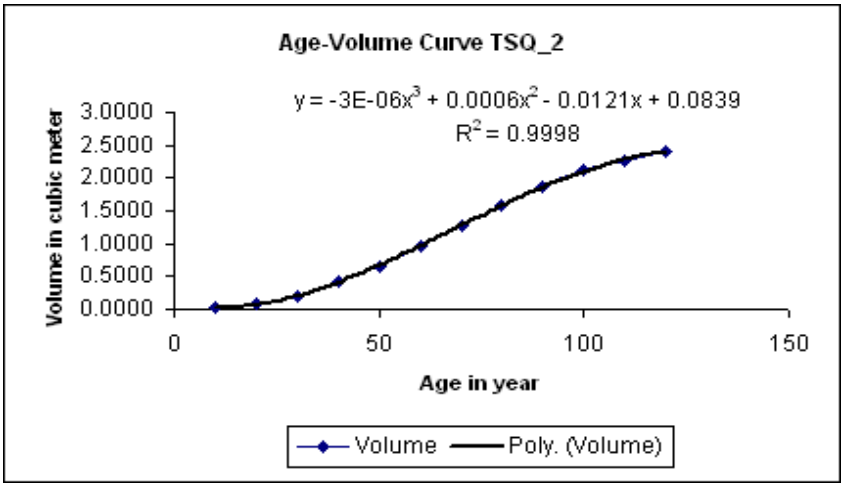
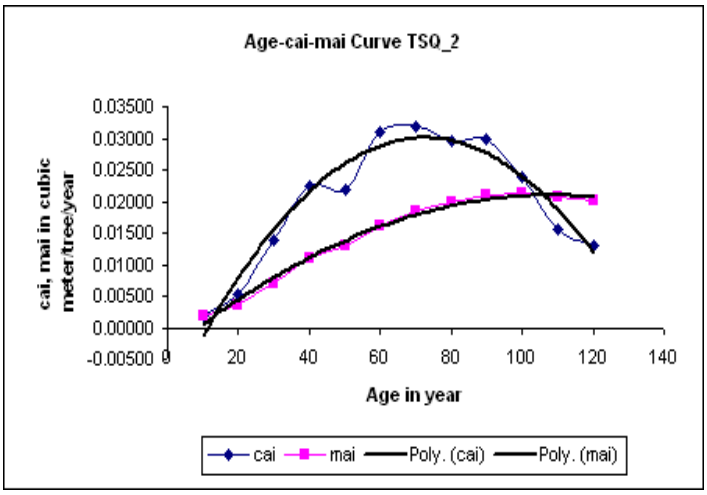


Table No-28
Table showing result of stem analysis-age-cai-mai: Teak Site Quality II

Age	cai	mai
10	0.00200	0.00200
20	0.00520	0.00360
30	0.01380	0.00700
40	0.02250	0.01088
50	0.02190	0.01308
60	0.03110	0.01608
70	0.03200	0.01836
80	0.02950	0.01975
90	0.03000	0.02089
100	0.02400	0.02120
110	0.01550	0.02068
120	0.01300	0.02004



cai and mai meet each other at the age of 103 years corresponds to mai = 0.02105 m^3/tree and gbh 190 cm.

Table No-29
Table showing result of stem analysis: Teak Site Quality III

STEM ANALYSIS FOR TEAK OF SITE QUALITY III
Compartment No: DP379.
Range;- Dechali; Round:- Dechali; Beat:- Berarghat.
Date of Felling:- 18-12-2004
Team Leader:- Shri M. B. Jawade, Range Forest Officer, Working Plan Chandrapur-2

Table No-30
Table showing result of stem analysis-age-volume: Teak Site Quality III

Age	Volume
10	0.0170
20	0.0652
30	0.2050
40	0.3350
50	0.6255
60	0.8855
70	1.2255
80	1.4560
90	1.6550
100	1.8200

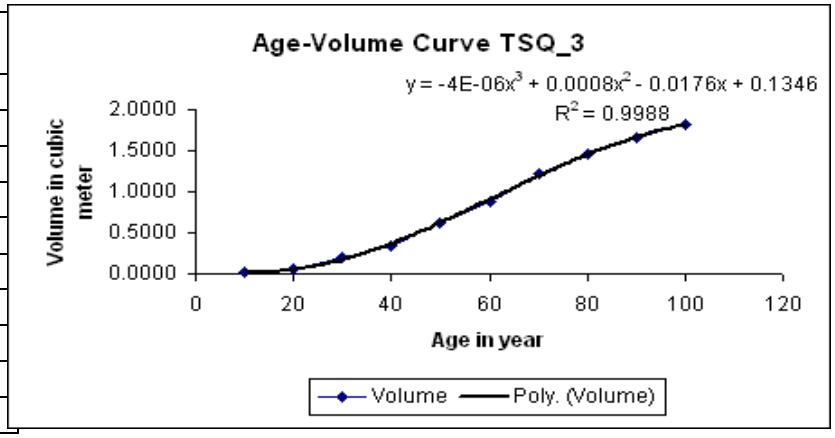
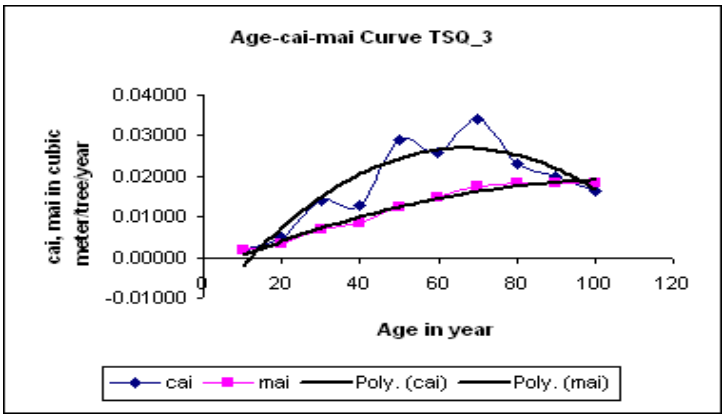


Table No-31

Table showing result of stem analysis-age-cai-mai: Teak Site Quality III

Age	cai	mai
10	0.00170	0.00170
20	0.00482	0.00326
30	0.01398	0.00683
40	0.01300	0.00838
50	0.02905	0.01251
60	0.02600	0.01476
70	0.03400	0.01751
80	0.02305	0.01820
90	0.01990	0.01839
100	0.01650	0.01820



cai and mai meet each other at the age of 94 years corresponds to mai = 0.0183 m³/tree at 127 cms gbh(ob)

Table No-32

Table showing result of stem analysis: Teak Site Quality IV

Compartment No:- SA259.
Range;- Sironcha; Round:- Wardham; Beat:- Wardham_1.
Date of Felling:- 03-01-2005
Team Leader:- Shri M. B. Jawade, Range Forest Officer, Working Plan Chandrapur-2

SrNo	Age in year	GBH(OB) cm	Height m	Volume m³	cai m³	mai m³
1	10	25	7.1	0.0150	0.00150	0.00150
2	20	38	11.2	0.0625	0.00475	0.00313
3	30	53	14.6	0.1955	0.01330	0.00652
4	40	65	16.3	0.3295	0.01340	0.00824
5	50	76	17.9	0.6050	0.02755	0.01210
6	60	88	19.3	0.8755	0.02705	0.01459
7	70	96	20.5	1.2050	0.03295	0.01721
8	80	103	21.3	1.4050	0.02000	0.01756
9	90	109	21.9	1.5200	0.01150	0.01689

Table No-33

Table showing result of stem analysis age-volume: Teak Site Quality IV

Age	Volume
10	0.0150
20	0.0625
30	0.1955
40	0.3295
50	0.6050
60	0.8755
70	1.2050
80	1.4050
90	1.5200

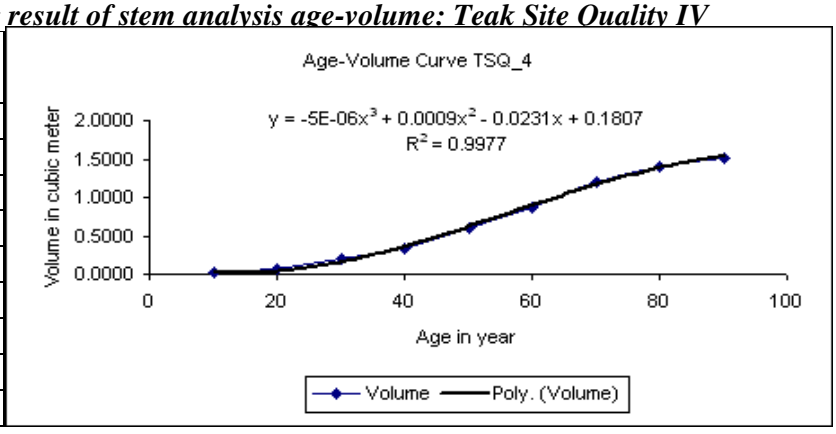
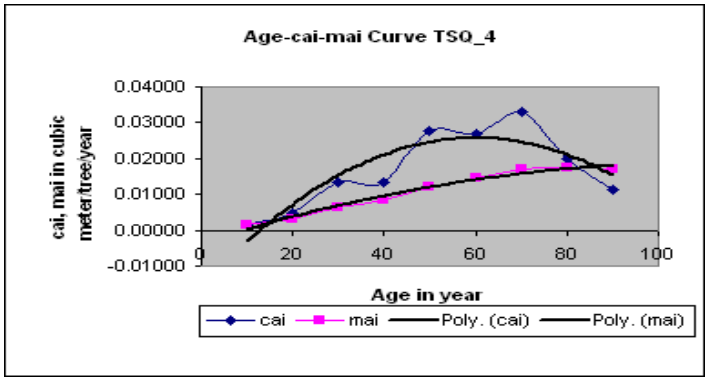


Table No-34
Table showing result of stem analysis age-cai-mai: Teak Site Quality IV

Age	cai	mai
10	0.00150	0.00150
20	0.00475	0.00313
30	0.01330	0.00652
40	0.01340	0.00824
50	0.02755	0.01210
60	0.02705	0.01459
70	0.03295	0.01721
80	0.02000	0.01756
90	0.01150	0.01689



cai and mai meet each other at the age of 84 years corresponding to mai = 0.0166 m^3/tree and gbh(ob) = 105 cm.

8.1.2.1.GROWTH OF AIN : Growth data for *ain* given in the Working Plans of Shri Kartar Singh for East Chanda(Gadchiroli) and Bhandara divisions and results of stem analysis of Jimalgatta(Sironcha) range are reproduced below :-

Table No-35
TABLE SHOWING GROWTH DATA FOR AIN
(Bhandara and Sironcha Division)

Age in years	Mean gbh (ob) in cms		
	Gadchiroli	Bhandara	Sironcha
10	11.0	011.9	012.20
20	21.0	026.7	027.40
30	30.0	038.5	039.60
40	39.0	050.3	052.20
50	49.0	059.7	060.10
60	58.0	(070.2)	072.30
70	67.5	(080.0)	083.15
80	78.0	(091.0)	093.23
90	88.0	(102.0)	104.53
100	99.0	(112.0)	120.27

8.1.2.2: The results of stem analysis of *bhirra, dhaora* and *haldu* carried out by Shri Kartar Singh during the preparation of working plan of East Chanda Division(Gadchiroli and Wadsa Divisions) is reproduced in the following table:

Table No -36

TABLE SHOWING GROWTH DATA FOR BHIRRA, DHAODA and TENDU
(Gadchiroli Division)

Species	gbh in cm	d bh in cm	Age in years
1	2	3	4
Bhirra	015	04.8	012
	030	09.5	024
	045	14.3	033
	060	19.1	043
	070	23.9	055
	090	28.6	063
	105	33.4	079
	120	38.2	092
	135	43.0	108
	150	47.7	124
Dhaora	015	04.8	016
	030	09.5	028
	045	14.3	040
	060	19.1	052
	075	23.9	066
	090	28.6	080
	105	33.4	093
	120	38.2	107
	135	43.0	123
	150	47.7	142
Tendu	015	04.8	012
	030	09.5	026
	045	14.3	039
	060	19.1	052
	075	23.9	066
	090	28.6	081
	150	33.4	098
	120	38.2	120
	135	43.0	154
	150	74.7	--

8.1.2.3:GROWTH OF *SEMAL* : Stem analysis of 29 trees was carried out by Shri Kartar Singh while preparing working plan for East Chanda division(Gadchiroli). Trees were selected girth at breast height between 105 and 150. It was obtained that the curves of CAI and MAI tend to intersect beyond 150 cm gbh. The results obtained are reproduced below in the following table.

Table No-37

TABLE SHOWING GROWTH DATA FOR SEMAL
(Gadchiroli Division)

Age in years	Height (m)	gbh (cm)	Std stem Timber Volume in m³
10	05.18	018.76	0.0064
20	08.99	037.89	0.0329
30	12.50	057.05	0.0329
40	15.24	074.61	0.2234
50	17.88	091.77	0.4138
60	20.12	104.93	0.6068
70	22.25	116.99	0.7723
80	23.77	127.67	0.9730

8.1.2.4: GROWTH OF BIJA :- Growth data obtained from stem analysis of Bhandara carried out by Shri Sardar during the preparation of working plan of Bhandara are reproduced in the following table:

Table No-38
TABLE SHOWING THE GROWTH OF BIJA

Age in years	Height in m	dbh (ub) cm	dbh (ob) cm	Std stem timber volume	CAI m³	MAI m³
1	2	3	4	5	6	7
10	03.00	02.70	04.00	0.002	0.0002	0.00020
20	05.90	08.00	10.00	0.015	0.0013	0.00075
30	08.50	13.22	15.70	0.055	0.0040	0.00183
40	11.10	18.20	20.90	0.130	0.0075	0.00325
50	13.30	23.00	25.90	0.237	0.0107	0.00474
60	15.60	27.75	30.80	0.385	0.0148	0.00642
70	17.75	32.02	35.20	0.598	0.0213	0.00854
80	(19.80)	35.58	38.80	0.788	0.0190	0.00985
90	(21.80)	37.90	41.20	0.900	0.0112	0.00100

8.1.2.5:GROWTH OF *SHISHAM* :- Stump analysis that was carried out in Jimalgatta range in 1990 and was used in the preparation of Working Plan for Sironcha Forest Division by Shri A P Deshmukh is reproduced in the following table:

Table No-39
TABLE SHOWING GROWTH OF SHISHAM

Age in years	dbh (ob) in cm
10	04.15
20	07.23
30	11.21
40	14.56
50	17.37

60	19.72
70	22.53
80	25.55
90	29.15
100	33.23
110	38.14
120	42.60

Above this diameter trees showed signs of hollowness in more than 80 % of trees

SECTION:8. 2 : ENUMERATION

8.2.1.1: YEAR OF ENUMERATION: - 2002-2003
8.2.1.1:AGENCY:- SOFR (Survey of Forest Resources) unit Chandrapur under then Deputy Conservator of Forests Working Plan Division Chandrapur-2.
8.2.1.3: METHOD OF ENUMERATION :- 1% Systematic Sampling by taking grid of 600 m x 600 m and at each corner of grid, sample plot of 60 m x 60 m for trees enumeration, 20 m x 20 m plot for shrub enumeration. Regeneration survey was also carried out in plot 20 m x 20 m. Bamboo was also enumerated in each plot in separate proforma.
8.2.2.1: ANALYSIS OF DATA:- Software prepared by Shri R.T Dhabekar ACF Gadchiroli (then RFO at the office of CF WP Nagpur) was used for data feeding and the compartment wise and species wise result was processed in excel sheet by the present Conservator of Forests, Working Plan Chandrapur –2 and the final results s thus obtained are as follows:
Basal area = Square meter per hectare;
GS/ha = Estimated Growing stock is per hectare in cubic meter;
Number of trees is per hectare in different girth classes and in total.
8.2.2.2:RANGEWISE GROWING STOCK: ENUMERATION RESULT: The result for Sironcha Forest Division is given in the tables given below:

TABLE № 40.

SHOWING GROWING STOCK OF SIRONCHA DIVISION:

SIRONCHA FOREST DIVISION											
Species	**16-30**	**31-46**	**46-60**	**61-75**	**76-90**	**90-105**	**106-120**	**121-135**	**136-150**	**151 & up**	**Total**
Teak	6.1	6.2	5.0	4.2	3.4	2.6	2.1	1.5	1.3	0.2	32.6
Bija	2.7	3.0	2.8	2.6	2.2	1.7	1.3	0.8	0.8	0.2	18.1
Haldu	1.1	1.1	1.3	1.2	0.9	0.6	0.4	0.3	0.3	0.1	7.2
Kalamb	0.8	1.1	1.1	1.0	0.9	0.7	0.5	0.3	0.4	0.0	6.7
Ain	9.2	7.3	5.6	4.8	3.8	2.9	2.1	1.2	1.1	0.2	38.3
Dhaoda	5.9	5.7	5.0	4.5	3.5	2.4	1.6	0.6	0.6	0.1	29.9
Lendia	6.0	4.8	3.1	2.2	1.2	0.7	0.3	0.4	0.0	0.0	18.5
Garari	13.6	14.3	10.8	8.3	4.5	2.1	0.7	0.2	0.1	0.0	54.5
Other	54.3	56.4	41.0	28.9	18.4	12.0	8.1	5.2	3.9	0.9	229.3
Total	**100.1**	**101.0**	**77.4**	**59.9**	**41.1**	**27.8**	**19.0**	**12.1**	**10.2**	**2.0**	**450.5**
GS/ha	1.9	6.5	7.2	11.6	12.1	11.7	11.0	9.1	9.8	3.1	83.8
Basal area	0.4	1.2	1.7	2.2	2.3	2.1	1.9	1.6	1.7	0.4	15.5

8.2.2.3:FARM FACTOR FOR SITE QUALITY III IN SIRONCHA FOREST DIVISION

TABLE № 41.
Table showing the farm factor in Sironcha Forest Division

Girth Class	16-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	>150
Form factor	0.019	0.064	0.093	0.193	0.294	0.420	0.579	0.751	0.958	1.536

8.2.2.4: Total Growing Stock in Sironcha Forest Division area and its monetary value for growing timber, taking Rs. 10,000 only as average price for that, it comes to Rs 1,781,290 lakh i.e. 17,812.9 crores. Besides that the tract provides environmental stability and services in the form of minor forest produces and major produce like bamboo and tendu leaves and medicinal plants and derivatives. Also these forests are home for numerous wildlife.

TABLE № 42.
Table showing the Growing Stock and its value in Sironcha Forest Division

SrNo	Girth Class	Gs/ha	Area(ha)	Total GS in m^3	Monetary Value in Rs in lakh
1	16-30	01.9	212564.4	403,872.4	40,387.24
2	31-45	06.5	212564.4	1,381,669	138,166.9
3	46-60	07.2	212564.4	1,530,464	153,046.4
4	61-75	11.6	212564.4	2,465,747	246,574.7
5	76-90	12.1	212564.4	2,572,029	257,202.9
6	91-105	11.7	212564.4	2,487,004	248,700.4
7	106-120	11.0	212564.4	2,338,208	233,820.8
8	121-135	09.1	212564.4	1,934,336	193,433.6
9	135-150	09.8	212564.4	2,083,131	208,313.1
10	151&up	03.1	212564.4	658,949.7	65,894.97
11	Total	83.8	212564.4	17,812,897	1,781,290

8.2.3: RESULTS OF ENUMERATION DURING PREVIOUS PLAN PREPARATION:

8.2.3.1:
Year of enumeration: 1986-1987.
Agency: Survey of Forest Resources Unit Chandrapur, Working Plan Divisio-2.
Method of enumeration: Strip Sampling Method.
Intensity of Sampling : upto 5%.
Standard error: 2.5%.
Result compiled: The result was compiled by Forest Statistician Maharashtra State.
The results were summarised as follows:
8.2.3.2: Selection Cum Improvement Working Circle of previous Plan.
Area covered: 48704.86 ha. Sampling intensity – 4.86%. Year of enumeration: 1986-87.

Standard error – 2.45%.
Felling series: Sirkonda, Govindgaon, Karancha, Chikela, Tumnur, Mudewahi, Enkabanda, Nandigaon and Amdeli.
Estimated growing stock: Timber – 30.75 cubic meter/ha (of trees above 30 cm girth.).
Average annual yield/ha (from coupes)-

Table No- 43

Kind	Species	Volume in m^3
Timber	Teak	1.19
Timber	Non-teak	1.05
	Total	2.24

8.2.3.3: Selection Cum Improvement Working Circle of previous Plan. Area covered: 27783.09 ha. Sampling intensity – 4.99%. Year of enumeration: 1986. Standard error – 3.05%.
Felling series: Indravati, Ambezara Uttamwaghu and Rajaram.
Estimated growing stock: Timber – 25.85 cubic meter/ha (of trees above 30 cm girth.).

8.2.3.4: Selection Cum Improvement Working Circle of previous Plan. Area covered: 14731 ha. Sampling intensity – 4.78%. Year of enumeration: 1987. Standard error – 3.05%.
Felling series: Tonder, Kamalapur and Kolamarka.
Estimated growing stock: Timber – 32.83 cubic meter/ha (of trees above 30 cm girth.).

8.2.3.5: Selection Cum Improvement Working Circle of previous Plan. Area covered: 491.96 ha. Sampling intensity – 7.76%. Year of enumeration: 1987.
Felling series: Yeraguda.

8.2.3.6: Coppice With Reserve Working Circle of previous Plan. Area covered: 5355.72ha. Sampling intensity – 4.69%. Year of enumeration: 1986-87. Standard error – 8.17%.
Felling series: Marrigudam, Rompalli and Golagudam.
Estimated growing stock: Timber – 22.26 cubic meter/ha (of trees above 30 cm girth.).

8.2.3.7: Minor Forests Working Circle of previous Plan. Area covered: 918.131 ha. Sampling intensity – 11.95%. Year of enumeration: 1987.
Felling series: Sironcha.
8.2.3.8:

Table No-44

TABLE SHOWING THE GROWING STOCK IN SELECTION CUM IMPROVEMENT WORKING CIRCLE: (PREVIOUS PLAN)

Species/ Girth class	**16-30**	**31-45**	**46-60**	**61-75**	**76-90**	**91-105**	**106-120**	**121-135**	**136&up**	**Total**
Ain	5.97	6.24	4.58	4.32	3.83	2.83	2.09	1.10	2.06	33.02
Bija	0.73	1.23	1.11	1.07	0.85	0.65	0.47	0.25	0.46	6.82
Lendia	2.26	2.51	1.69	1.04	0.62	0.32	0.15	0.06	0.09	8.74
Shisham	0.24	0.49	0.46	0.40	0.27	0.16	0.08	0.04	0.04	2.18
Teak	5.03	5.65	3.59	2.84	2.09	1.66	1.12	0.54	0.85	23.37

Tiwas	0.05	0.09	0.09	0.06	0.05	0.03	0.02	0.02	0.01	0.41
Haldu	0.03	0.05	0.04	0.04	0.04	0.03	0.02	0.03	0.08	0.37
Khair	3.37	3.78	1.64	0.64	0.21	0.08	0.03	0.01	0.01	9.77
Kalamb	0.16	0.23	0.16	0.15	0.09	0.06	0.05	0.03	0.05	0.98
Salai	0.24	0.42	0.66	0.81	0.84	0.73	0.62	0.45	1.10	5.90
Semal	0.24	0.25	0.21	0.20	0.16	0.13	0.11	0.08	0.19	1.57
Other	42.42	51.87	38.57	26.58	16.66	9.65	5.93	3.11	5.70	200.49
Total	60.77	72.81	52.81	38.15	25.71	16.33	10.69	5.71	10.64	293.62
GS/ha	1.1546	4.6598	4.911	7.363	7.56	6.8586	6.1895	4.2882	10.193	53.2

Where girth class is in cm, No of trees per ha, GS/ha in cubic meter respectively.

8.2.3.9: COMPARISION OF GROWING STOCK BETWEEN PAST RESULT AND PRESENT RESULT: On comparing the tables 40 and 43 we observe that total number of stems per hectare has increased from 293.6/ha to 450.5/ha. Total growing stock has also increased from 53 cubic meter per ha to 83 cubic meter per ha. The reason for overall growth seems to be the rest given to these forests. Even the extraction of trees under Selection Cum Improvement Working Circle was very conservative. The increase is in all girth classes. It is prominent in lower girth classes. It means that regeneration is adequate and establishment is smooth. Species wise comparison is as follows:

Table No-45

Enumeration	**2002-03**	**1986-87**		
Species	**Total**	**Total**	**Difference**	**Remarks**
Teak	32.6	23.37	(+) 9.23	39%
Bija	18.1	6.82	(+) 11.28	165%
Haldu	7.2	0.37	(+) 6.83	1846%
Kalamb	6.7	0.98	(+) 5.72	584%
Ain	38.3	33.02	(+) 5.28	16%
Dhaoda	29.9	28.75	(+) 1.15	4%
Lendia	18.5	8.74	(+) 9.76	112%
Garari	54.5	40.60	(+) 13.90	34%
Other	229.3	150.97	(+) 78.33	52%
Total trees/ha	**450.5**	**293.62**	(+) 156.88	53%
GS/ha in m^3/ha	83.82	53.2	(+) 30.62	58%

Though the percentage increase in *haldu* and *kalamb* is very high, in absolute respect increase in *lendia, garari, bija* and *teak* is very significant. Increase in other species is also noteworthy.

8.2.3.VOLUME TABLE FOR SIRONCHA FOREST DIVISION

8.2.3.1: The average site quality class met with in the selection cum improvement working circle and improvement working circle is III. Site qualities IV, II and I are also found in some areas. But for sake of simplicity for working in the field and estimation projection, the quality III has been considered.

8.2.3.2: For working out the farm factors, logging registers of the departmentally worked coupes in the past have been considered. The girth classes differ by 15 centimeters starting from below 30 cms girth class. Maximum 100 trees have been considered for every girth class for a particular locality. The figures thus arrived at have been plotted against the

girth classes. Smooth curves were obtained for each locality. From the graphs the farm factors were read for each girth class for each locality. The summarised results are given in the following table.

8.2.3.3: FORM FACTORS FOR QUALITY III IN SIRONCHA FOREST DIVISION

Table No-46

Sr№	Girth class in cms	Area where applicable				
		Kopela, Somanpalli	Jimalgatta, Karancha	Nandigaon, Tumnur	Sirkonda, Amdeli	Chikela, Mudewahi
1	<30	0.015	0.010	0.009	0.020	0.020
2	30-45	0.055	0.040	0.035	0.055	0.070
3	45-60	0.100	0.075	0.075	0.095	0.115
4	60-75	0.195	0.130	0.130	0.140	0.175
5	75-90	0.310	0.200	0.215	0.200	0.250
6	90-105	0.450	0.300	0.320	0.280	0.330
7	150-120	0.610	0.420	0.460	0.390	0.435
8	120-135	0.770	0.560	0.615	0.525	0.535
9	135-150	0.925	0.740	0.800	0.705	0.660
10	150-165	1.080	0.935	1.000	0.910	0.790
11	165-180	1.235	1.140	1.200	1.130	0.930
12	180-195	1.390	1.345	1.410	1.375	1.110
13	195-210	1.530	1.560	1.610	1.620	1.280

8.2.3.4:FORM FACTORS FOR QUALITY IV IN SIRONCHA FOREST DIVISION

Table No-47

Sr№	Girth class in cms	Area where applicable			
		Rompalli, Marrigudam & Golagudam	Jimalgatta	Kamalapur	Sironcha
1	<30	0.015	0.015	----	----
2	30-45	0.060	0.037	----	0.015
3	45-60	0.080	0.095	----	0.084
4	60-75	0.140	0.186	0.132	0.174
5	75-90	0.190	0.309	0.292	0.283
6	90-105		0.464	0.452	0.412
7	150-120		0.651	0.613	0.560
8	120-135		0871	0.773	0.729
9	135-150		1.123	0.934	0.918

SECTION :8.3. STOCKMAPPING

8.3.1.3. Stockmapping of the area was carried out by the staff of Working Plan Division Chandrapur-2, during 2004-05. The compartmentwise result of which is given in Appendix No I(b) in volume II of this plan. Stocking has been also calculated with the analysis of satellite imagery data of the tract for year 2004 at Geomatics Center, office of CCF WP Nagpur.

RESULT OF STOCKMAPPING

TYPE	AREA(HA)	% AREAWRT WP AREA
TEAK SQ_I	260.812	0.12%
TEAK SQ_II	2537.669	1.19%
TEAK SQ_III	4863.591	2.29%
TEAK SQ_IVa	1663.5	0.78%
TEAK SQ_IVb	76.142	0.06%
TEAK TOTAL	9406.649	4.43%
MISC SQ_I	2541.513	1.20%
MISC SQ_II	16435.11	7.73%
MISC SQ_III	102440.5	48.21%
MISC SQ_IVa	22597.79	10.63%
MISC SQ_IVb	18609.35	8.76%
MISC TOTAL	163362.3	76.88%
PLANTATION	6131.432	2.89%
UNDERSTOCKED	3216.819	1.51%
NATURAL BLANK	12346.4	5.81%
CULTIVATION	18034.98	8.49%
TOTAL UNWORKABLE	39729.631	18.65%
GROSS AREA	212,498.58	99.96
BAMBOO AREA	31745.357	14.94%

Where: SQ= CP & Berea Teak Site Quality.

8.3.1.4. DENSITY CLICING FROM SATELLITE DATA OF THE TRACT:

Satellite data of the tract for the period December 2004 has been analyzed at Chief Conservator of Forests, Working Plan, Nagpur and the result so obtained is reported below.

Density above 0.6	118,459.87 ha.
Density 0.4 to 0.6	42,237.12 ha.
Density 0.1 to 0.4	54,948.52 ha.
Natural blanks, cultivation agricultural land	Remaining area of the tract.

As the most of the compartment consist of forest as well as village area, it is not possible to segregate the agricultural land of the village and forest area under cultivation (Encroachment) and natural blank area. The Statement of density wise and compartment wise area details has been given in Appendix No.I.

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CHAPTER –IX

WILDLIFE PRESERVATION

SECTION: 9.1: HISTORY AND WILDLIFE PROTECTION:

9.1.1.1. The tract dealt with has been an ideal natural habitat for the wildlife. The forests are mainly of miscellaneous species and are dense and rich so far as varieties of species are concerned. As per records a good varieties of wild animals inhabited the tract. But due to indiscriminate shooting, poaching and shikar by the local tribals mainly Madias, the number of wild animals in most part of this tract have declined despite habitat being naturally ideal.

9.2: DISTRIBUTION OF WILDLIFE:

9.2.1.1: The fauna was widely distributed in areas adjoining rivers. The wild animals commonly found in the past and rarely at present in this tract are as follows:
A – CARNIVORE: Tiger (*Panthera tigris*), Panther (*Panthera pardus)*, Hyena (*Hyena hyena*), Wild Dog (*Cuon alpinus*), Wolf (*Canis lupus*), Jackal (*Canis aureus*), Fox (*Vulpes bengalensis*), Jungle Cat (*Felis chaus*), etc.
B – HERBIVORE : Bison (*Bos gaurus*), Sambhar (*Cervus unicolour*), Cheetal (*Axis axis*), Nilgai (*Boselaphus tragocamelus*), Wild Boar (*Sus scorfa),* Sloth Bear (*Melursus ursinus*), Barking Deer (*Muntiacus mujtjak*), Langur (*Presbytis entellus*), Hares (*Lepus nigricollers),* H*are, Black buck, Four horned antelope, Rhesus macaque,etc*
C – RODENTS: Flying Squirrel (*Petaurista petaurista),* Porcupine (*Hystrix indica*), Mongoose, Rats, mice etc.
D- WILD BIRDS: Painted Sand Grouse (*Pterocles indicus*), Common Sand Grouse (*Pterocles exustus*), Pea Fowl (*Pavo cristatus*), Grey Jungle Fowl (*Gallus sonneratii*), Painted Partridge *(Francolinus pictus*), Grey Partridge (Francolinus pondicerianus), Black Breasted Quail (*Coturnix coromandelicus*), Red Spur Fowl (*Galloperdix spadicea*), Crane (*Grusantigone*), Spotted Bill Duck (*Anas poecilorhyncha*), Pigeon (*Treron phoenicaptera*), Dove (*Streptopelia spp*), Cotton Teal (*Nettapus coromandelianus*), Whistling Teal (*Dendrocygna javanica*) Cuckoo (*Cuculus varius*), Snipe (*Capella galliachges*) , Great Indian Hornbill, other common birds etc.

9.2.1.2. The tract dealt with is situated in the interior most part of the district and is away from town. Besides, perennial water courses and stagnant water pools found in he area are capable of supporting a variety of wild animals and birds. That is why even today a good number of wild animals and birds are found in the tract.

9.3: CONCENTRATION OF WILD ANIMALS:

9.3.1.1. SHOOTING AND GAMES: In the past wild animals were classified for the purpose of shooting in to three categories viz (1) Very big game, (2) Big game and (3) Small game. The details of which are as follows:
9.3.1.2: VERY BIG GAME: (1) **Bison (***Bos gaurus***):** They were occurring in small herds in the hilly region. During summer they were frequently seen in the plain forests along the main rivers and the main water courses. Stray herds were noticed occasionally. Bisons occur in small herds in the hilly regions of Amdeli, Kopela, Somanpalli, Patagudam,

Karancha, Kolamarka and Parsewada. During the summer they are frequently seen near the main rivers.

9.3.1.3. BIG GAME:
(1)TIGER (*Panthera tigris*): Tiger (Sher) was occurring in moderate number. During summer they usually remained confined to the water courses. A few migratory ones occasionally used to enter into this tract from Bastar District of Chhattisgarh. Presently, tigers are confined to interior part of the tract and number is approximately a dozen.
(2) PANTHERS (*Panthera pardus*): They were less common in this tract. They were seen frequently only around the villages. Sometimes they used to enter into villages and do considerable damage to the cattle. Panthers are frequently seen round the villages of Kopela and Bodela in Asarali Range, Kotagudam of Pranhita range, Karancha-Ambezara tract of Jimalgatta and Pranhita ranges, Parsewada – Tekada tract of Sironcha, Kolamarka and Kodsepalli forests of Kamalapur and Dechali ranges etc.
(3) SAMBHAR (*Cervus unicolor*), Cheetal (*Axis axis*), and **Blue bull** (*Boselaphus tragocamelus*), and **Black buck**, **Four horned antelope**: They were confined in the foothills only. These are confined to the foothills near Sirkonda, Mudewahi and Amdeli of Sironcha Range; Kopela, Patagudam, Kistayapalli of Asarali Range; Karancha, Enkabanda, Motakpalli of Jimalgatta range and Korepalli block of Kamalapur range. Occasionally they are found in other parts of the tract.
(4) BARKING DEER (*Muntiacus muntjak*): They were found all over the tract and even today they are found every where.
(5) SLOTH BEAR *(Melursus ursinus)*: The people are very much afraid of this animal as it attacks unprovoked. Therefore, they are still available in this tract in good number. Sloth bear is commonly found in Somnoor, Golagudam of Asarali Range, Jimalgatta and Kistapur forest of Jimalgatta range and Sirkonda, Chitur, Georgepetha of Sironcha range.
(6)WILD BOAR *(Sus scorfa*): They are very common all over the area.
(7)WILD DOG (*Duon alpinus*): They move over in pack and do considerable damage to the wild animals. These packs are seen moving in the forests. However, the exact location can not be given.
9.3.1.4. SMALL GAME: The Malabar squirrel (*Scrinus spp*), Flying squirrel, jackal (*Canis aureus*), Hyena (Hyena *hyena),* Porcupine (*Hystrix indica),* Langur monkey (*Presbytis entellus*) were common all over the tract. Even today, barring common langur other species are found in the entire tract. Langur are confined to fringes of Sironcha range, near new habitation.
9.3.1.5. BIRDS: Pea fowl (*Pavo cristatus*), Grey jungle fowl (*Gallus sonneratii*) are common. Ducks are commonly found in the rivers. Titar (*Francolinus pondicerianus*), *Bater (Coturnix coromandelicus)*, Saras crane (*Antigone antigen*) are common in the tract. Other common birds are found in the entire tract.
9.3.1.6. Madia tribal eat lizards, red ants and many other animals which are not poisonous. Village *Patel* used to do shikar and distribute the meat to the villagers in the past.

SECTION: 9.4: HISTORY OF WILDLIFE:

9.4.1.1. The forests of Sironcha Division which are abundant in wildlife are mostly away from the densely populated areas. It is also inaccessible. Wild animals and birds enjoyed natural protection. Game used to be hunted under license. 10 shooting blocks were fixed in reserved forests, i.e. Somanpalli, Jhinganoor, Jimalgatta, Korepalli, Enkabanda, Sirkonda, Chitur, Bamni, Pranhita, Repanpalli. Shikar/Poaching by local villagers was common in the past.

SECTION: 9.5: PAST MANAGEMENT OF WILDLIFE AND ITS RESULTS:

9.5.1.1. Prior to the abolition of proprietary rights in 1951, there existed no rules for the regulation of hunting in these forests and the killing of animals for pleasure as well as for the sport was common. Subsequent to the abolition of proprietary rights in 1951, the then Madhya Pradesh Government framed rules for regulating shooting in the village forests in the year 1953.

9.5.1.2. Subsequently when these forests were notified as Protected Forests under Section 29 of the Indian Forest Act, 1927, the management of wildlife came to be regulated as per the rules framed under Section 32(J) of the Act together with the prevalent rules under CP and Berar Games Act, 1953 and the Game Block Rules as specified in Madhya Pradesh Forest Manual Volume II.

9.5.1.3. In October 1961, the Government of Maharashtra clarified that the Rules framed under Bombay Wild Animals and Wild Birds Protection Act of 1951 would be applicable. That Act was superceded by the Wildlife (Protection) Act, 1972 which came into force from June 1, 1973 and Rules, 1975. Hunting of animals has been completely banned except for the shooting permission given to the cultivators during the harvesting season to shy away wild boars.

SECTION: 9.6: LEGAL POSITION:

9.6.1.1. Earlier Sironcha Tahsil was under Hyderabad State. The provisions in Berar Forest Law, 1886 were passed on October 22, 1886. No separate Act about the wildlife was in vogue at that time. However, under section 3, sub rule (7), the definition of the forest produce included "skins, tusks, bones and horns." Under Section (8) of the said Act, " any person who acts in contravention of the said Act in the State Forests was punishable with the fine which may go upto fifty rupees or when the damage resulting from his offence amounts to more than twenty five rupees, to double the amount of such damage. "Under section 10, sub section (4) of the said Act," the residency by orders may regulate any part of the State Forests for the hunting, shooting, fishing, poisoning water and setting trap or snares".

9.6.1.2. The Berar Law, 1886 was amended by the Berar Forest Law, 1891. Here the scope of the Act was extended. The section 7(b) states that forest produce includes the following when found in, or brought from a forest, that is to say: wild animals, skins, tusks, horns, bones, silk cocoons, honey and wax and all other parts or produce of animals or forest produce. Section 7(2) (b) states that punishable with the fine which may extend upto fifty rupees or when the damage resulting from the offence amounts to more than twenty five rupees to double the amount of such damage. The section 10(4)(iii) empowered the resident to frame the rules regarding regulation of hunting, shooting, fishing, poisoning water and setting traps and snares.

9.6.1.3. In the year 1911, vide Notification No GIFD No 2197-1-B, dated October 13, 1911 the Indian Forest Act, 1878 was made applicable. The section 2(b) (iii) included the wildlife in its definition of the forest produce. Under section 25(I) of the said Act, any person in contravention of any rules which the local Government may time to time prescribe, kills or catches elephants, hunts, shoots, fishes, poisons water or set traps or

snares shall be punishable with imprisonment for a term which may extend to six months or with time not exceeding five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting court may direct to be paid.

9.6.1.4. The Bombay Wild Animals and Wild Birds Protection Act, 1951, for the protection of wildlife, was extended to Vidarbha region with effect from June 1, 1961. Though this Act did not propose a significant change in the management of game in Reserved and Protected Forests, yet it was important as it operated in areas out side Reserved and Protected Forests also. Under the provision of this Act, arms license holders for sports were to register themselves with the wildlife preservation officer. This Act prescribed a closed season for hunting and classified games into four categories, viz small game, big game, special big game and pet animals. It also sought to control transaction in trophies and other wildlife products. The statutory Wildlife Advisory Board was constituted under this Act to advise the Government on various important matters concerning wildlife.

9.6.1.5. The Indian Board of Wildlife was constituted in 1952 with the main object of devising ways and means for Conservation of wildlife through coordinated legislative and practical measures and sponsoring the resetting up of National Parks and Wildlife Sanctuaries. A comprehensive and unified National and State Park Act, 1971 was passed which provided for appointment of any Advisory Committee to advise in constitution and declaration of National Parks and Sanctuaries and formulation of administrative policy. The Parliament then enacted the wildlife (Protection) Act, 1972, which came into force in the State of Maharashtra with effect from June 1, 1973. From the commencement of this Act, every other Act relating to any matter, contained in this Act and in force in the State stood repealed. The subsequent rules made under the Act are as follows:

The Wildlife (Stock Declaration) Rules, 1973 (became effective in Maharashtra wef June 1, 1973).

The Wildlife (Transactions and Taxidermy) Rules, 1973 (became effective in Maharashtra wef June 1, 1973.

Wildlife (Protection) Rules, 1975 (became effective from March 6, 1975).

The Wildlife (Protection) Licensing (Additional matters for consideration) Rules, 1983 (became effective wef April 14, 1983).

9.6.1.6. The wildlife (Protection) Act, 1972 is a piece of comprehensive legislation which provides for effective protection and preservation of wildlife restriction on hunting and regulation of trade in wild animals articles made out of wild animals. Hunting of wild animals is strictly prohibited under this Act unless it is specially permitted. Wild animals have been categorised in five schedules and animals included in schedule-I and part II of schedule-II received the privilege of strict protection. Animals specified in these schedules are permitted to be hunted if they are threat to or cause damage to life or property, and animals in schedule-II has become so disabled or diseased as beyond recovery.

9.6.1.7. Animals specified in schedule-II (Part-I), III & IV were prohibited from hunting, except under and in accordance with specific license issued under that Act or it had become dangerous to human life or property or had become diseased or disabled beyond recovery. Only vermin included in schedule-V had been excluded from strict protection.

9.6.1.8. Hunting of young and female of any wild animals other than vermin, or any deer with antlers in velvet is strictly prohibited unless specially permitted (Section-15). The Act specifically requires declaration to be furnished by the individuals as well as trophies etc in their control, custody or possession.

9.6.1.9. The Government of India, vide letter dated September 18, 1975 stated that the control over tanks and rivers in National Parks and Sanctuaries should be vested with management authorities and not with the fisheries or irrigation department.

9.6.1.10. Government of India, vide letter No 1 E-11011/3/75/FRY-9-(WLF), has clarified that the certificate of legal procurement to be issued by the Chief Wildlife Warden is not necessary where an animal is not included in any schedule of the Wildlife (Protection) Act, 1972. The export will be regulated by the Ministry of Commerce.

9.6.1.11. Subsequently, the delegation of power and duties of the Chief Wildlife Warden to the Police Sub-Inspector for the Purpose of section 41(1) and section 55 of the Wildlife (Protection) Act, 1972 was granted by Government Resolution No WLP-1973/197578-FI dated April 5, 1976.

9.6.1.12. The schedules are revised by the Government on and off as it was required under section 61 of the Wildlife (Protection) Act, 1972. The Government of Maharashtra, under section 64 of the Wildlife (Protection) Act, 1972, framed Rules vide letter NoWLP-1679/95507/F-5. These Rules were amended further by the Wildlife (Protection), Maharashtra Rules, 1975.

9.6.1.13. The wildlife Protection Act was again amended to be called as Wildlife (Protection) Amendment Act, 1986 and it came into force from November 25, 1986. Under Section-44 of the Wildlife) Protection) Act, 1972, the Government vide letter NoWLP/1682/100208/CR-43 (1)/F-5 permitted the trapping of cobra and Russell vipers by a licensed dealer for the purpose of extracting venom. Under the power conferred under sub section (1) and sub section (2) of the section 64, the Government of India vide letter no WLP/1682/10020(iii)/F-5 framed the new rules called Wildlife (Frog Leg Industry) Rules, 1987 and it came into force from November 25, 1987. The Government of India vide letter no F-No1-2/91/WL/1, dated October 21, 1991, and further amended the Wildlife (Protection) Act, 1972. The following are the important amendments:

The plants have also been included under the purview of this Act.
The zoo and circus have been defined and included under this Act.
The game reserves have been dropped.

Section 9 of Wildlife (Protection) Act 1972 has been amended and there is a total prohibition of hunting of animals specified in schedule II III IV & I except as provided under section 11 and 12.

In 2003, comprehensive amendment were made to have heavy penalties and stringent punishment in case of wildlife related offences.

9.6.1.14. The following are the restrictions on hunting as per section 17 of Wildlife (P) Act, 1972. The following acts are prohibited, i.e.
Hunting any wild animal, from or by means of a wheeled or mechanically propelled vehicle on water or land or by aircraft.

Use of mechanically propelled vehicle for the purpose of driving or stampeding any wild animals;
Use of chemical, explosive, pitfalls, poisons, poisoned weapons, snares or traps, except in as far as these relate to the capture of wild animals under a Wild Animals Trapping License;
Hunting of special game or big game other than with a rifle, unless specially authorised by the license;
Setting fire to vegetation for the purpose of hunting.
Using artificial light for the purpose, of hunting except when specially authorised to do so under a license in the case of carnivore over a kill;
Hunting during night, except when specially authorised.
Hunting any animals on water holes or a salt-lick or other drinking places or on path or approaches to the same, except water-birds and sand-goose;
Hunting any wild animal on any land not owned by Government without the consent of the owner, or his agent or lawful occupies of such claim.
Hunting during closed period as per section 16;
Hunting with the help of dogs, any wild animals, except water-bird, chakor, partridge or quail

9.6.1.15. In 1991, the Government of India has passed the Wildlife (Protection) Amendment Act, 1991, which came into force with effect from October 2, 1991,except the Sections 35, 44, 55 (c), Chapter III A and Chapter IVA. The salient features of this amended Act in brief are as follows:

(i) The words "game reserves, big game and small game" have been omitted from the Act.
(ii) Hunting the wild animals specified in Schedule I, II, III and IV of the Act has been banned, except as per the provisions of section 11.
(iii) A new chapter III-A has been introduced for the protection of specified plants. The specified plants have been included in a new schedule.
(iv) Section 29 of the Act has been amended and like National Parks no wildlife can be exploited or removed from a Sanctuary too. This means all concentrated felling and collection of minor forest produce from Sanctuaries would be stopped.
(v) A new section has been added in the Act to provide that no new arm licenses shall be issued within 10 km of a Sanctuary without prior concurrence of the Chief Wildlife Warden of the state.
(vi) A ban has been imposed on dealing with the imported ivory and articles made therefrom.
(vii) A new chapter, IVA has been introduced to provide for central Zoo Authority and reorganization of zoos.
(viii) The penalties for wildlife offences have been enhanced substantially. Section 39 of the Act has been amended to the effect that have been used for committing an offence and have been seized shall become the property of the Government.
(ix) Section 61(I) of the Act has been amended and now the power to make any change in the schedules of the Act vests only with the Central Government

SECTION: 9.7: RIGHTS AND CONCESSIONS:

9.7.1.1. No rights and/or privilege are granted to any person over wildlife. But a member of schedule tribes can subject to the provisions of Chapter IV of Wildlife Protection Act, pick collect or possess in the district he resides any specified plants or plant derivative

thereof for his bonafide personal use. However, permits can be granted by the Chief Wildlife Warden with prior approval of the State Govt for the special purposes for education, scientific research and collection of specimen for recognized zoos, museums and similar institutions.

SECTION: 9.8: OTHER MEASURES ADOPTED FOR PROTECTING WILDLIFE:

9.8.1.1. Besides the legal provisions under the Wildlife (Protection) Act, 1972, amended from time to time and the various rules made thereunder, following measures have been taken to protect the wildlife.

9.8.1.2. Compensation is paid to the owner whose cattle are killed by a tiger in the forest areas as per the provisions contained in Govt Resolution No WLP/1570/224482-X-II, dated September 30, 1971, No MSC-1075/113554/F-1, dated March 25, 1977 and No WLP/1579/6200/4/F-1, dated May 29, 1979. This provision was extended to the cattle killed by panther also and the killing by tiger or panther outside the forest areas was also included vide Govt Resolution No WLP/1581/116974/F-5, dated August 22, 1984.

9.8.1.3. Provision has been made for compensation in case of death or injury to human life by wild animals vide Govt Resolution No WLP/1679/105651/CR-6/F-5 dated November 27, 1986 and amended from time to time and latest in 2003. The maximum amount of compensation in case of death is Rs 200000/- and in case of injury Rs 50000/- and for minor injuries upto 7500/-

9.8.1.4. In 1972, with a view to check illegal shooting of wild animals, the State Government sanctioned the grant of reward to the informants in respect of unlicensed shooting provided that the information is found to be valid and leads to the conviction of the offender. In addition, the State Government has decided to sanction the rewards equal to 50% of the compensation actually recovered from the offender for illegal shooting to the Gram Panchayat or its office bearers or individuals who render cooperation in detecting such illegal shooting.

9.8.1.5. Besides, the legal provisions for protection of wildlife, public awareness for protection and preservation of wildlife is created through the programmes under wildlife week. The details of cattle lifting, injuries or killing of human being are given in this plan along with compensation paid to the victim family.

SECTION: 9.9: INJURIES TO WILDLIFE:

The following agents are mainly responsible for the destruction of wildlife in Sironcha Forest Division:

9.9.1.1: POACHING/SHIKAR: Poaching and shikar by tribals though not recorded is the most important reason for destruction and depletion of the wild animals in this tract. The local tribal, particularly Madia are highly fond of meat and shikar. They even hunt monkeys which are rarely seen in the area. Besides, in the past some poachers from outside the area have also caused damage to the wild animals to a great extent. Presently, the threat to the wild animals is mainly from local Madia and other tribals. Naxalites

prevent field staff from performing their touring duties and this way hunting of tigers and panthers go unnoticed and their skin is smuggled through gangs operating internationally.

9.9.1.2. FIRE: The entire forest is prone to fire annually. Some areas might be exception to it but the remote areas, which are the ideal habitat, burn annually. The forest fire damages the natural habitat and drives animals towards human habitation to take shelter and thereby they become easy prey to poachers and local villagers.

9.9.1.3. WATER: Most of the streams, except a few big rivers, become dry during summer. Therefore, animals had to visit only a few waterholes. This fact makes the villagers and poachers easy to kill the wild animals.

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PART – II

FUTURE MANAGEMENT DISCUSSED AND

PRESCRIBED

CHAPTER – I

BASIS OF PROPOSALS

SECTION – 1.1.1: NATIONAL FOREST POLICY

1.1.1.1: National Forest Policies for India were enunciated in the years 1894, 1952 and 1988. The changes in the policy were brought about according to prevailing national needs and public requirements both local and general.

1.1.1.2: FOREST POLICY 1894 FOR INDIA: The objectives of the Forest Policy of 1894 were as follows:

(1) To preserve climate and physical conditions of the country.
(2) To preserve minimum amount of forest necessary for the general well being of the country.

1.1.1.3 Other priorities of 1894 forest policy were:

(1) Priority to cultivation over forestry.
(2) To meet the local public demand from forest, free or at concessional rates, prior to the revenue consideration.
(3) Realization of revenue to the greatest possible extent after meeting the local demand.

1.1.1.4: NATIONAL FOREST POLICY OF 1952: Deteriorating environmental conditions in the country changed the view point of the policy makers while enunciating the forest policy. World Wars, dependence of defence and reconstruction schemes on forestry were basic turning factors in making the forest policy. The following needs were identified

(1) 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 maximum and deteriorate the least.
(2) The need for checking:
    (a) Denudation in mountainous region.
    (b) Erosion along the treeless banks of great rivers and on vast undulating wastelands.
(3) The need for establishing tree lands, to ameliorate physical climatic conditions for general well being of the people.
(4) The need for progressively increasing demand for grazing, small wood for agricultural implements, firewood etc and to release the cattle dung for manure to step up food production.
(5) The need for the realisation of revenue in perpetuity.

1.1.1.5: The Forest Policy of 1952 stated that the discretion of the State Government to regulate the details of forest administration in their respective territories is left unfettered to enable them to frame their policies and legislation for conserving and utilising the forest resources, provided that those policies of the State do not impinge adversely upon the general economy and physical balance of an adjoining State and in general the Forest Policy of the Central Government.

1.1.1.6: NATIONAL FOREST POLICY OF 1988: With 42nd amendment to Constitution of India, Forest has been brought to Concurrent List from State List. The Central Government exercises more authority in forestry matters now. Which is clearly reflected in the National Forest Policy of 1988. The reasons for such changes were the increasing demand for timber, fuelwood and fodder, inadequacy of protection measures, diversion of forest lands to non forestry uses and tendency to maximum revenue realisation. The present policy is based upon the realisation of basic facts that forests are to be managed primarily for preservation, maintenance, sustainable utilization, restoration and enhancement of natural environments.

1.1.1.7: Basic objectives that should govern the National Forest Policy, 1988 are the following:

(1) Maintenance of environmental stability through preservation and restoration of ecological balance that has been adversely disturbed by serious depletion of the forest of the country.
(2) Conserving the national 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 the 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) Increasing substantially the forests/tree cover in the country through massive afforestation and Social Forestry Programmes, especially on all denuded, degraded and unproductive lands.
(5) Meeting the requirements of fuelwood, fodder, minor forests produce and small timber of the rural and tribal population.
(6) Increasing the productivity of forests to meet essential national needs.
(7) Encouraging efficient utilization of the forest produce and maximum substitution of wood.
(8) Creating a massive people's movement with the involvement of all women, for achieving these objects and to minimize pressure on existing forests.

1.1.1.8: The principal aim of the Forest Policy, 1988 is to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium, which is vital for sustenance of the life forms: human, animal and plant. The derivation of direct economic benefit must be subordinate to this principal aim.

1.1.1.9: The basic emphasis of the policy is on the management of the existing forests and forestland keeping in view the protection, improving their productivity and conservation of total biological diversity by strengthening the network of National Parks, Sanctuaries, Biosphere Reserves and other Protected Areas, providing sufficient fodder, fuel and pasture in areas adjoining forest to prevent their depletion and protecting, improving and enhancing the production of minor forest produce which provides the sustenance to tribal population. Based upon these objectives the salient features of Forest Policy, 1988 are as follows

(1) Severe restrictions on schemes and projects, which interfere with forests, that clothe steep slopes, catchment of rivers, lakes and reservoirs.
(2) No working of forests without the Central Government having approved the Management Plan.
(3) Non-introduction of exotic species without long term scientific trials for species.

(4) The rights and concessions including grazing always remain related to the carrying capacity of forests.
(5) Rights and concessions enjoyed by the tribal should be protected. Their domestic requirement of fuelwood, fodder, minor forests produce and timber for construction should be the first charge.
(6) Forest management plans to take special care of the needs of wildlife Conservation.
(7) Effective action should be taken to prevent encroachments on forest land and the existing encroachment should not be regularised.
(8) Forest based industries should raise the raw material needed by themselves in arrangement with the private cultivators.
(9) Survey of forest resources to be completed on scientific lines for updating information.

SECTION-1.2: NATIONAL WILDLIFE ACTION PLAN (2002-2016)

1.2.1: PREAMBLE

1.2.1.1: BACKGROUND: The first National Wildlife Action Plan (NWAP) was adopted in 1983, based upon the decision taken in the XV meeting of the Indian Board for Wildlife held in 1982. The plan had outlined the strategies and action points for wildlife conservation which are still relevant. In the meanwhile, however, some problems have become more acute and new concerns have become apparent, requiring a change in priorities. Increase commercial use of natural resources, continued growth of human and livestock populations and changes in consumption patterns are causing greater demographic impacts. Biodiversity conservation has thus becomes a focus of interest. The National Forest Policy was also formulated in 1988, giving primacy to conservation. Hence, this new National Wildlife Action Plan.

1.2.1.2: **OVERVIEW**:

(i) Wildlife encompasses all uncultivated flora and undomesticated fauna. Every species has right to live and every threatened species must be protected to prevent its extinction.
(ii) Water, wilderness and wildlife are irrevocably interlinked. With mounting agricultural, industrial and demographic pressures, wilderness areas, which are the richest repositories of wildlife and biodiversity have either shrunk or disappeared. Their continued existence is crucial for the long-term survival of biodiversity and the ecosystems supporting them.
(iii) Effective ecosystem conservation is the fundamental of long-term ecological and economic stability. Natural processes, forests and wildlife habitats recharge aquifers, maintain water regimes and moderate the impact of floods, droughts and cyclones. Thereby they ensure food security and regulate climate change. They are also a source of food, fodder, fuel and other products supplementing the sustenance of local communities.
(iv) India ranks sixth among the 12 mega biodiversity countries of the world. Conservation of biodiversity is directly linked with conservation of ecosystems and thus with water and food security. These together constitute a major plank of Indian economy.
(v) National planning has not taken into account the adverse ecological consequences of shrinkage and degradation of wilderness from the pressures of population and commercialization. As a result, we have witnessed the alarming erosion of our natural

heritage which comprises rivers, aquifers, forests, grasslands, mountains, wetlands, coastal and marine habitats, arid lands and deserts. This has also affected natural phenomena such as breeding, ranging and migration of wildlife and geomorphologic features.

(vi) The increased frequency and intensity of natural disasters, the plummeting fertility of our soils and the accelerated degradation of our fresh water resources have imposed a crippling financial burden on the nation. This underscores the realign development priorities to take into account ecological imperatives including the protection of wild species, which sustain and enhance natural habitats, even as they depend on such areas for their survival.

(vii) Rural development for communities inhabiting forest lands and other wilderness regions suffers both from inadequate resources and inappropriate measures. It has failed to address their strong dependence upon natural biomass resources vis-à-vis the shrinking and degrading resource base. Farm productivity has also declined due to lack of proper support, causing impoverishment and enhanced pressures upon natural areas. Resource impoverished communities have therefore begun to place even greater pressure on the biomass of our forests and have led to widespread alienation of people from the goals of nature conservation efforts.

(viii) Habitats loss caused by development projects such as dams, mines etc. compound the problems of wildlife conservation.

(ix) The constraining impact of habitats loss has been compounded by illegal trade fuelled by a rising demand of wildlife products and their lucrative prices in the international markets.

1.2.2: POLICY IMPERATIVES

1.2.2.1: Ecological Security: To protect the long-term ecological security of India, the national development agenda must recognize the imperative of identifying and protecting natural ecosystems from over-exploitation, contamination and degradation. Short term economic gains must not be permitted to undermine the ecological security.

1.2.2.2: Priority to Conservation: Assigning conservation a high priority both at the level of central and state governments is an imperative. Its integration in all development programmes, evolving appropriate funding mechanism, enhancement of financial allocations and provision of adequate personnel with requisite expertise has to be ensured, to arrest the ongoing trend of degradation and to restore wildlife and its habitats.

1.2.2.3: National Land Use Policy: The NWAP cannot be implemented in isolation. Wildlife cannot be restricted to national parks and sanctuaries. Areas outside the protected area network are often vital ecological corridor links and must be protected to prevent isolation of fragments of biodiversity, which will not survive in the long run. Land and water use policies will need to accept the imperative of strictly protecting ecologically fragile habitats and regulating use elsewhere.

1.2.2.4: Primacy for Water and Sustenance: Water must be recognized as a prime product of natural forests. Forests must be managed to optimize and protect hydrological systems. The National Forest Policy of 1988 which emphasizes conserving our natural heritage in the form of natural forests, flora and fauna, is in consonance with this imperative. A critical imperative is also to recognize forests, wetlands and other natural habitats as a source of survival for millions of people, in particular as a source of NTFP and aquatic resources.

1.2.2.5: In Situ Conservation: Primacy must be accorded to in situ conservation, the sheer anchor of wildlife conservation. Ex situ measures in zoological parks and gene banks may supplement these objectives, without depleting scarce wild resources.

1.2.2.6: People`s Support for Wildlife: Local communities traditionally depend on natural biomass and they must, therefore, have the first lien on such resources. Such benefits must be subject to assumption of a basic responsibility to protect and conserve these resources by suitably modifying unsustainable activities. Conservation programmes must attempt to reconcile livelihood security with wildlife protection through creative zonation and by adding new Protected Area (PA) categories in consultation with local communities, such as an inviolative core, conservation buffer, community buffer and multiple use areas.

1.2.2.7: Man-Animal Conflict: While increasing man-animal conflict is an outcome of shrinkage, fragmentation and deterioration of habitats, it has caused destruction of wildlife and generated animosity against wild animals and protected areas. This is a crucial management issue, which needs to be addressed through innovative approaches.

1.2.3.1: STRATEGY FOR ACTION: Adopting and implementing strategies and needs outlined above will call for action covering the following parameters:

I. Strengthening and enhancing the Protected Area Network.
II. Effective Management of Protected Areas.
III. Conservation of Wild and Endangered Species and Their Habitats.
IV. Restoration of Degraded Habitats outside Protected Areas.
V. Control Poaching, Taxidermy and Illegal Trade in Wild Animal and Plant Species.
VI. Monitoring and Research.
VII. Human Resource Development and Personnel Planning.
VIII. Ensuring People`s Participation in Wildlife Conservation.
IX. Conservation Awareness and Education.
X. Wildlife Tourism.
XI. Domestic Legislation and International Conventions.
XII. Enhancing Financial Allocation for Ensuring Fund Flow to the Wildlife Sector.
XIII. Integration of National Wildlife Action Plan with Other sectoral Programmes.

SECTION-1.3: NATIONAL FORESTRY ACTION PROGRAMME

1.3.1.1: To reverse the process of degradation and for sustainable development of forests, the Government of India have prepared National Forestry Action Plan (NFAP), a comprehensive strategic plan to address the issues underlying the major problems of the forestry sector. The objective of the NFAP is to enhance the contribution of forestry and tree resources to ecological stability and people centered development through qualitative and quantitative improvement in the forest resources.

1.3.2.1: Identified issues in forestry sector: The objective of NFAP is to evolve issue based programmes in the line of provisions of the National Forestry Policy, 1988. It is to integrate the forestry development programmes in the country within the framework of

National Five Year Plans. Five inter-related basic issues have also been identified and these are the basis of the following programmes structure.

I. Protect existing forest resources.
II. Improve forest productivity.
III. Reduce total demand.
IV. Strengthen policy and institutional framework.
V. Expand forest area.

Programmes:

1.3.2.2: Protect Existing Forest Resources: It has three main sub-programmes of (1) forest protection, (2) soil and water conservation, and (3) protected areas and biodiversity conservation. These include the works of forest survey, demarcation and mapping, inventory, biodiversity conservation, protected area management, protection against poaching, encroachment and fire etc. and other related issues.

1.3.2.3: Improve Forest Productivity: It has four main sub-programmes of (1) rehabilitation of degraded forests, (2) research and technology development, (3) development of NWFPs, and (4) assisting private initiatives with community participation. These involve mainly research, improvement in technology, enrichment planting, soil and water conservation, regeneration, rehabilitation and afforestation mainly in existing forests.

1.3.2.4: Reduce Total Demand: It has three main sub-programmes for the efficient uses of (1) fuelwood and fodder, (2) timber, and (3) NWFPs. This includes the programmes for reduction of demand placed on forests through the technology of reservation, seasoning, substitutions, and other measures or the efficient utilization of forest products and also through extensive biomass plantations.

1.3.2.5: Strengthen Policy and Institutional Framework: It has three main sub-programmes of strengthening of (1) central forestry administration, (2) central forestry institutions, and (3) State forestry administration and institutions. These include the development of infrastructures like building, communications, etc. and strengthening of staff including HRD. This issue also covers all aspects of capacity building, forest policy and legislation, public forest administration and organizational structure, research, planning and budgeting etc.

1.3.2.6: Expand Forest Area: It has two main sub-programmes of (1) tree plantation on forest and non-forest lands, and (2) people's participation in plantations and its protection. This issue includes the extension of forestry programmes in all kind of wastelands and marginal farm lands. It also includes the programmes of creation of plantation forests through wasteland reclamation, afforestation and promotion of agro forestry.

1.3.3.1: Objectives of NFAP: Following are the objectives of the National Forestry Action Programmes:

(1) For sustainability of forests, productivity of forest plantations to be increased at least 3 to 5 cubic meter per hectare per year by promoting regeneration and enrichment plantations.
(2) Hygiene of forests to be improved through suitable silvicultural practices.

(3) Efforts to be made to bring one-third geographic area of the country under forest and tree cover by plantations on all categories of wastelands and agro forestry.
(4) Protected area network to be expanded and managed for biodiversity conservation.
(5) Plantations on non-forest wastelands to be done mostly with fuelwood species as 70% of the wood produce from forests are used as fuelwood. Species of pulpwood and other industrial wood may be encouraged in farm forestry.
(6) Institution for the people's participation in protection and development of degraded and fringe forests to be strengthened.
(7) NWFP species to be developed and value addition may be promoted at village level.
(8) Grazing in forests to be regulated as per carrying capacity and silvicultural needs.
(9) Infrastructure for forest inventory, research and development to be strengthened. HRD should also be improved.
(10) Investment for the sustainable development of forests should be rational and in proportionate to the total production.

1.3.32 Supreme Court rulings, other rules of the land etc.

SECTION – 1.4: FACTORS INFLUENCING THE GENERAL OBJECTS OF MANAGEMENT:

1.4.1.1: The main factors influencing the object of management are listed below:

(i) Large tracts of forest that were managed under the coppice with reserve system of previous plans and schemes, have suffered due to heavy grazing, illicit felling and lack of coppice regeneration, with the result that bulk of forest areas have become under stocked and open and failed to regenerate. These forests may respond if they are restocked under afforestation scheme coupled with soil and moisture conservation works and strict control on grazing.
(ii) The increasing demand by local population for fire wood, small timber and fodder grass in thickly populated areas have affected forests. Adequate provisions have to be made in the plan for meeting the demands and alternatives provided for demand beyond carrying capacity.
(iii) The state of natural regeneration of teak and miscellaneous is satisfactory in interior areas of the tract, where as it is unsatisfactory in plains, and nearby human habitations. New recruits are not established due to frequent fires, soil compactness and excessive biotic pressure. Provisions will have to be made in the plan for soil working and tending and protection of young natural regeneration which would help them to establish.
(iv) The forest tract of thickly populated area are opened, under stocked and degraded which need improvement in their stocking by tending natural regeneration supplemented by artificial regeneration.
(v) The forest areas of steep slopes, undulating areas and along water courses are liable for soil erosion hence provisions to be made in the plan to check the same.
(vi) There is increasing demand for the timber of teak and other important species in the market.
(vii) Owing to excessive cattle population in villages, the demand for fodder and grazing has increased around these villages.
(viii) Restoration of degraded environment as a national object.
(ix) The tract is experiencing heavy pressure from adjoining areas of Andhra Pradesh in respect of protection of growing stock, threat to staff and grabbing of forest land under the cover of naxalism. The Government as the management must give

adequate protection to forest, the staff as well as forest land to maintain its ecological and social fabric intact.

(x) To improve the habitat and hygiene of wildlife.

SECTON: 1.5: SPECIAL OBJECTS OF MANAGEMENT:

1.5.1.1: Important factors which influence the general objects of management is the rapid depletion of growing stock around the thickly populated villages due to various causes as enlisted in paragraph 1.4.1.1. In consonance with National Forest Policy 1988, the special objects of management will be as follows:

(1) To preserve and enrich the growing stock in natural forests and to restock all under-stocked and degraded areas of the forests with the help of soil and moisture conservation measures, reforestation and regulation of grazing.

(2) Preservation and improvement of minor forest to obtain progressively increasing yield of small timber, fire wood, and poles in order to meet the demands of local people and to provide grazing area to local cattle.

(3) To combat ill effects of soil erosion wherever it has already started and to prescribe preventive measures.

(4) To increase the production of non-timber forest produce and to manage the same scientifically.

(5) To increase the productivity and ensure progressively increasing yield of forest produce in demand.

(6) To achieve compatible wildlife management with emphasis on rare, endangered and endemic species like tigers, panthers, wild buffalos, four horned antelopes, sloth bears, wild dogs and sambhars.

SECTION: 1.6: ANALYSIS AND VALUATION OF THE CROP:

1.6.1.1: The enumeration of the growing stock has been done by Survey of Forest Resources Unit (SOFR) Chandrapur-2. The results of enumeration have been given in this draft plan report Volume II, Appendix № II. The analysis of data for growth and growing stock highlights **that number of trees per hectare has increased as compared to previous enumeration**. The possible reasons being conservative removal of trees in worked areas, low grazing pressure in interior areas except near river tract along Andhra Pradesh state border and some threats given by Naxalites to stop fellings whenever they desire. The comparative analysis of growing stock (№ of tree per hectare, Basal area/ha and Growing Stock/ha) in 1986-87 and 2002-03 is given in following table:

TABLE № 48

COMPARISON OF GROWING STOCK IN SIRONHA DIVISION

Year of enumeration	**1986-87**			**2002-03**		
Girth Classes	tree/ha	BA/ha	GS/ha	tree/ha	BA/ha	GS/ha
16-30	60.77	0.26	1.15	100.1	0.4	1.9
31-45	72.81	0.84	4.66	101	1.2	6.5
46-60	52.81	1.18	4.91	77.4	1.7	7.2
61-75	38.15	1.4	7.36	59.9	2.2	11.6
76-90	25.71	1.41	7.55	41.1	2.3	12.1
91-105	16.33	1.25	6.86	27.8	2.1	11.7

106-120	10.69	1.09	6.19	19	1.9	11
121-135	5.71	0.74	4.29	12.1	1.6	9.1
136&up	10.64	1.73	10.19	120.2	2.1	12.8
Total	293.62	9.89	53.16	450.5	15.5	83.8

Where: GS/ha = Growing stock is in cubic meter per hectare and
BA/ha = Basal area is in square meter per hectare.

TABLE № 49

TABLE SHOWINGCOMPARATIVE DIFFERENCE & % DIFFERENCE OF TREES/ha

Sr №	Girth classes	1986-87	2002-03	Difference	% difference
1	16-30	60.77	100.1	39.33	65%
2	31-45	72.81	101.0	28.19	39%
3	46-60	52.81	77.4	24.59	47%
4	61-75	38.15	59.9	21.75	57%
5	76-90	25.71	41.1	15.39	60%
6	91-105	16.33	27.8	11.47	70%
7	106-120	10.69	19.0	8.31	78%
8	121-135	5.71	12.1	6.39	112%
9	136 & up	10.64	120.2	1.56	15%
10	Total	293.62	450.5	156.88	53%

TABLE № 50

TABLE SHOWING GRAPHICAL PRESENTATION OF TREES/ha

Number of trees per hectare

Girth Classes	86-87	2002-03
16-30	60.8	100.1
31-45	72.8	101
46-60	52.8	77.4
61-75	38.2	59.9
76-90	25.7	41.1
91-105	16.3	27.8
106-120	10.7	19
121-135	5.7	12.1
136&up	10.6	12.2
Total	293.6	450.5

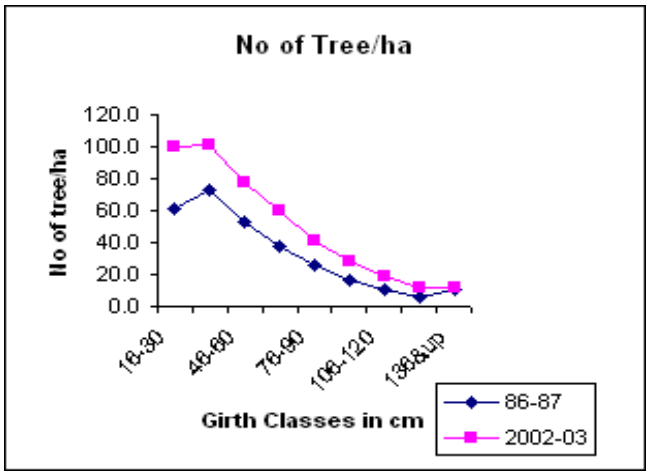


TABLE № 51

BASAL AREA SQUARE METER PER HECTARE

Girth Classes	1986-87	2002-03
16-30	0.26	0.4
31-45	0.84	1.2
46-60	1.18	1.7
61-75	1.4	2.2
76-90	1.41	2.3
91-105	1.25	2.1
106-120	1.09	1.9
121-135	0.74	1.6
136&up	1.73	2.1
Total	9.89	15.5

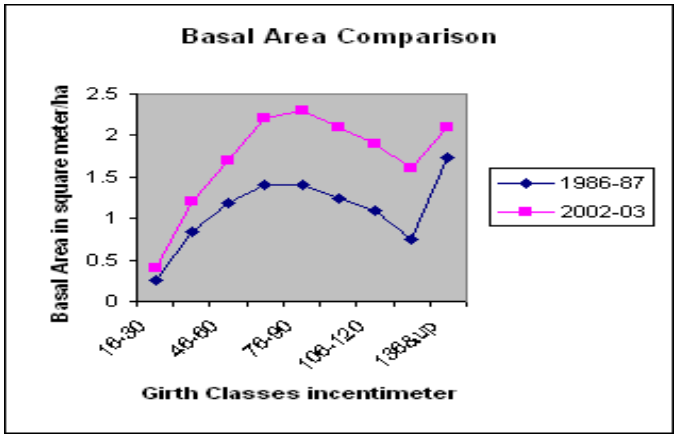
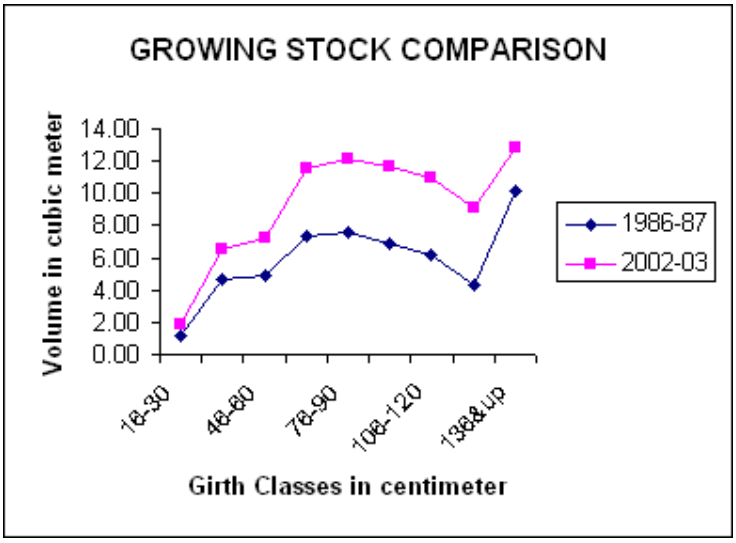


TABLE № 52

Growing Stock in m³/ha

Girth Classes	1986-87	2002-03
16-30	1.15	1.9
31-45	4.66	6.5
46-60	4.91	7.2
61-75	7.36	11.6
76-90	7.55	12.1
91-105	6.86	11.7
106-120	6.19	11
121-135	4.29	9.1
136&up	10.19	12.8
Total	53.16	83.8



Species wise comparison is as follows:

TABLE № 53

TABLE SHOWING IMPORTANT SPECIES DISTRIBUTIONS

Enumeration / **Species**	**2002-03** / **Total**	**1986-87** / **Total**	**Difference**	**% difference**
Teak	32.6	23.37	(+) 9.23	39%
Bija	18.1	6.82	(+) 11.28	165%
Haldu	7.2	0.37	(+) 6.83	1846%
Kalamb	6.7	0.98	(+) 5.72	584%
Ain	38.3	33.02	(+) 5.28	16%

Dhaoda	29.9	28.75	(+) 1.15	4%
Lendia	18.5	8.74	(+) 9.76	112%
Garari	54.5	40.60	(+) 13.90	34%
Other	229.3	150.97	(+) 78.33	52%
Total	**450.5**	**293.62**	(+) 156.88	53%
GS/ha	83.82	53.2	(+) 30.62	58%

Though the percentage increase in *haldu* and *kalamb* is very high, increase in *lendia, garari, bija* and *teak* is very significant.

SECTION: 1.7: CLASSIFICATION OF FORESTS

1.7.1.1: The State Government vide GR No MEP-1365/132211-Y, dated December 6, 1968 classified the state forests into following classes on functional basis:

(i) **PROTECTION FORESTS** This category includes forests on very steep slopes, 25° and over, along river banks, forest that have depleted through mal-treatment and further harvesting will accelerate soil erosion and adversely affect the productivity of agricultural lands in the lower regions. The management shall aim at soil and moisture conservation.

(ii) TREE FORESTS: - This includes forests that are situated in remote areas, prominently suited for growing a large sized timber and other products of commercial value.

(iii)MINOR FORESTS: - It includes forests that are honey combed with cultivated lands capable of producing small timber and providing grazing to local cattle.

(iv)PASTURE LANDS: - This category includes open and under stocked forests and the lands that have ceased to yield even small timber but these are conveniently suitable for grazing to the local cattle.

(v)MISCELLANEOUS FORESTS:
(a)GRASS RESERVES: - Open forests that are interspersed with cultivated lands mainly suitable for producing of fodder, are included in this category.
(b)REMAINING AREAS: - Areas needed for other works.
1.7.1.2: With regard to wildlife habitats, the entire tract is potential habitat for many kinds of wildlife. Both floral and faunal forms of wildlife are found in plenty.

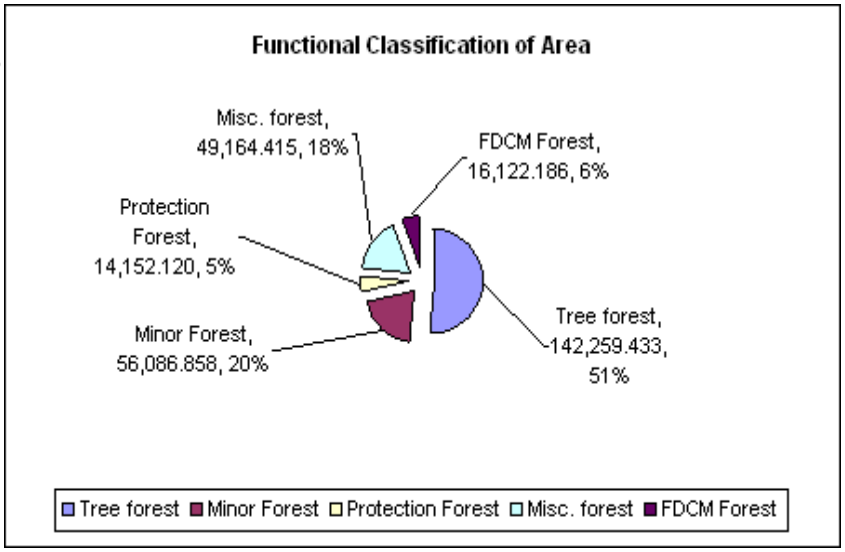
Table No. 54

TABLE SHOWING THE EXTENT OF FORESTS AS PER THE ABOVE CLASSIFICATION

SrNo	Class of forests	Area in ha	% wrt Division area
1.	Protection Forests	14,152.120	05.1%
2.	Tree Forests	1,42,259.433	51.4%
3.	Minor Forests	56,086.858	20.2%
4.	Miscellaneous Forests	49,164.415	17.5
5.	FDCM area	16,122.186	05.8%
6.	**Total**	**2,77,785.160**	**100%**

Table No. 55
PIE CHART SHOWING OF DISTRIBUTION OF FORESTS

Tree forest	142,259.433
Minor Forest	56,086.858
Protection Forest	14,152.120
Misc. forest	49,164.415
FDCM Forest	16,122.186



SECTION: 1.8: METHOD OF TREATMENT

1.8.1.1 It is influenced by situation and condition of the forests, condition of regeneration of the crop, needs of local people and availability of labours, staff and resources.

1.8.1.2: PROTECTION FOREST: - These areas have been excluded from the commercial felling. Preservation of tree growth and to conserve soil and moisture is paramount need for these forests. No felling and plantation have been prescribed in these areas. Seed sowing of local species by seed dibbling is contemplated through local Forest Beat Guard.

1.8.1.3: TREE FORESTS: - Better quality forests capable of producing large timber away from human settlements have been included in this category. These areas have been managed under conversion system of Hussain, Dasputre, Joshi's plans, selection-cum-improvement system of Dasputre, and Joshi, Deshmukh and various schemes. Steep slopes have been excluded from harvesting. Tending of natural regeneration wherever it is adequate, soil and moisture conservation works wherever necessary and plantation of timber species in the areas where natural regeneration is inadequate have been prescribed. Planting of teak will be taken in suitable areas in such a way that the over all percentage of the teak becomes 10% to15 % in the resultant crop. These areas will be treated under Selection cum Improvement Working Circle and Teak Plantation Working Circles. Matured and over matured crop have been prescribed to be treated by taking up teak plantation after removal of over wood in the growing stock.

1.8.1.4: MINOR FORESTS: - Poor quality of forests with density less than 0.4 subjected to heavy biotic pressure are included in this category. Soil and moisture conservation works, plantation of indigenous species specially for small timber, poles, fodder and fire wood will be taken to meet the local demand. Tending of existing natural regeneration will be

taken up. These areas shall be treated under improvement working circle and plantation working circles.

SECTION: 1.9: FORMATION OF WORKING CIRCLES

1.9.1.1 Based on the objectives of the management and the methods of treatment, the following working circles are being carved out:

Table No. 56

Sr№	Name of the working circle	Area allotted (ha)
1.	Selection cum Improvement Working Circle	132,070.021
2.	Improvement Working Circle	56,086.858
3.	Teak Plantation Working Circle	10,189.412
4.	Protection Working Circle	14,152.120
5.	Bamboo (Overlapping) Working Circle	55,781.939
6.	Non Timber Forest Produce	Overlapping.
7.	Joint Forest Management	Overlapping.
8.	Wildlife Management	Overlapping.
9.	Ecotourism	Overlapping.
10.	Forest Protection	Overlapping.
11.	**Area under Working Plan**	**212,498.579**
12.	Area under FDCM Management	16,122.186
13	Miscellaneous area*	49,164.415
14	Grand Total Forest Area (including FDCM)	277,785.160

* Miscellaneous area consists of 723.736 ha of river bed declared reserved forests and not included in any working circle and 48,440.679 ha as difference in planimetted and notified area.

1.1.1.2. COMPARISION OF WORKING CIRCLE AREA OF PRESENT PLAN TO THAT OF PREVIOUS PLAN

Table № 57

TABLE SHOWING WORKING CIRCLE AREA OF PREVIOUS AND PRESENT PLANS

Sr. No	Working Circles	A.P.Deshmukh Plan (area in ha)	Present Plan (area in ha)	Remarks
1	Selection Cum Improvement Working Circle	137,582.814	132,070.021	- 5,512.793
2	Improvement Working Circle	51,492.344	56,086.858	+ 4,594.514
3	Protection Working Circle	14,348.340	14,152.120	- 196.220
4	Teak Plantation Working Circle		10,189.412	+ 10,189.412
5	Bamboo (Overlapping) Working Circle	55,256.459	55,781.939	+ 535.480
6	Non Timber Forest Produce			Overlapping
7	Miscellaneous Working Circle	28,711.304	---------	- 28,711.304
8	Wildlife (Overlapping) Working Circle	Entire tract	Entire tract	Overlapping
9	Joint Forest Management		Overlapping	

10	Forest Protection		Entire tract	
11	Ecotourism		Entire tract	
12	FDCM Ltd	In Miscellaneous Working Circle		+16,122.186
13	Working Plan Area	232,134.802	212,498.579	-20,636.223

1.9.1.3 Range wise and working circle wise distribution of forest area has been given in the following table

Table № 58

TABLE SHOWING RANGE WISE AND WORKING CIRCLE WISE AREA

Range	Selection cum Improvement Working Circle		Improvement Working Circle		Protection Working Circle	
	CN	Area(ha)	CN	Area(ha)	CN	Area(ha)
Asarali	75+1=76	14,324.400	47+1=48	8,657.961		
Dechali	41+10=51	15,877.502	15+1=16	5,989.374		
Jimalgatta	25+15=40	13,396.274	18+7=25	6,644.252	0+9=9	529.335
Kamlapur	92+46=138	35,293.404	19+38=57	11,961.438		
Pranhita	100+32=132	28,643.920	4+21=25	3,802.250	5+0=5	970.380
Sironcha	69+47=116	24,534.521	87+21=108	19,031.681	49+8=57	12,652.405
DIVISION	469+85=554	132,070.021	188+89=277	56,086.858	54+17=71	14,152.120

Table № 58 continued-

Range	Old Teak Plantations		Teak Plantations to be taken		Teak Plantation Working Circle	
	CN	Area(ha)	CN	Area(ha)	CN	Area(ha)
Asarali	0+5=5	144.600	3+0=3	846.807	3+5=8	991.407
Dechali	1+14=15	1,578.372	1+1=2	625.258	2+14=16	2,203.630
Jimalgatta	0+12=12	426.700	2+0=2	633.420	2+12=14	1,060.120
Kamlapur	0+21=21	1,460.680	2+0=2	368.145	2+21=23	1,828.825
Pranhita	0+15=15	1,228.600	4+0=4	751.680	4+15=19	1,980.280
Sironcha	0+36=36	1,397.000	0+2=2	728.300	0+36=36	2,125.300
DIVISION	1+103=104	6,235.952	12+3=15	3,953.610	13+102=115	10,189.562

Table № 58 continued-

Range	Total area		FDCM		Miscellaneous area	Grand Total area	
	CN	Area(ha)	CN	Area(ha)	Area(ha)	CN	Area(ha)
Asarali	126	23,973.768	35	6,980.510		161	30,954.278
Dechali	70	24,070.506	9	3,177.163		79	27,247.669
Jimalgatta	67	21,629.981	22+2=24	5,964.513		89	27,594.494
Kamlapur	163	49,083.667				163	49,083.667
Pranhita	145	35,396.830				145	35,396.830
Sironcha	261	58,343.807				261	58,343.807
Division	832	212,498.579	66+2=68	16,122.186	49,164.415	898	277,785.160

Table№ 58 continued-

Range	Bamboo (Overlapping) Working Circle		
	CN	Bamboo compartment area(ha)	Bamboo area
Asarali	17	3,612.937	1,695.666
Dechali	19	6,827.473	3,857.722
Jimalgatta	20	6,427.347	3,122.185
Kamlapur	48	15,085.075	8,705.666
Pranhita	6	1,315.490	447.120
Sironcha	94	22,394.192	13,485.585
Division	204	55,781.939	31,745.357

Where: CN stands for number of compartments allotted to respective working circles. 22+2= 24 stands for number of full compartments and part compartments and total compartments respectively. In past the forests were notified approximately in blocks. Even unsurveyed areas have been notified. Still some of the villages are unsurveyed. Total forest areas were planimetted during previous plan preparation. 48,440.679 ha area does not form the part of any compartments and 723.736 ha of river bed declared reserved forests not included in any compartment. Hence 49,164.415 ha area has been kept under miscellaneous area to conform with notified area as per Form No. I of the Division.

SECTION: 1. 10: BLOCKS AND COMPARMENTS:

1.10.1.1 Old notifications of forests were in blocks. Even ex jamindari forests taken over by government which were first notified as protected forests, were notified in blocks for unsurveyed villages and survey number wise village wise for surveyed villages. Most of protected forests have been declared as Reserved Forests in 1992 in which surveyed villages survey number wise notification is available. But in unsurveyed villages, still block wise notification has been issued.

1.10.1.2: The old reserved forests of Sironcha Forest Division had been categorised into A-Class, B-Class reserved forests. The extent of A-Class reserve forest is 116,866.774 ha included in 376 compartments where as the extent of B-Class reserved forest is 9,006.549 ha included in 22 compartments. According to Government of Maharashtra, R& FD Notification No FLD/3685/9316/CR-42/F-3 dated May 5, 1992, an additional area admeasuring 139615.860 ha of PF has been declared as Reserved Forest The total area of the protected forests and new reserved forests is 151,905.750 ha included in 441 compartments. The enactment of Indian Forest Act, 1927, refer only Reserved Forest and does not mention about A Class or B Class Reserved Forest and hence in this plan, all the areas reserved under the Act of 1878 or 1927 has been referred to as Reserved Forest**.** 6.080 ha area has been purchased by popularly known Guruji by Gadchiroli Collector and declared as PF and handed over to Forest Department to save Guruji against humiliation from Naxalites as his hands had been chopped off by Naxalites.

TABLE №59

TABLE SHOWING BLOCK WISE AND LEGAL STATUS WISE AREA

Sr№	**Legal Status**	**Name of the Blocks**	**Area (hectare)**	**Remarks**
1.	Reserved Forest	Sironcha A Class	78,850.444	Reserved Forests

2.	Reserved Forest	Sironcha B Class	9,006.549	declared pre
3.	Reserved Forest	Korepalli	6,478.610	independence
4.	Reserved Forest	Jimalgatta	31,537.720	
5.	Reserved Forest	RF of Surveyed Villages	15,0538.800	Reserved Forests declared post
6.	Reserved Forest	RF of Unsurveyed Villages	124,556.490	independence
7.	Protected Forest	PF of Surveyed Villages	10,538.800	Protected Forest not declared
8.	Protected Forest	PF of Unsurveyed Villages PF	1,751.090	Reserved Forest
9.	Protected Forest	Guruji Land	6.080	Purchased by Guruji
10.	Grand total of forest area		2,77,785.160	
11.	Reserved Forest	RF under FDCM	13,142.686	Under FDCM
12	Protected Forest	PF under FDCM	2,979.500	management
13	Total Forest under FDCM		16,122.186	

SECTION 1.9: PERIOD OF THE PLAN:

1.9.1.1: The period of the plan is fixed for 10 years from 2005-2006 to 2014-15. If the controlling officer in charge of the Forest Circle under whose jurisdiction the tract dealt with is supervised finds prescriptions not conducive to fulfillment of objectives, mid term review of the plan may be taken up by him during 2010-11.

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CHAPTER- II

WORKING PLAN FOR SELECTION-CUM-IMPROVEMENT WORKING CIRCLE

SECTION. 2.1. GENERAL CONSTITUTION OF THE WORKING CIRCLE

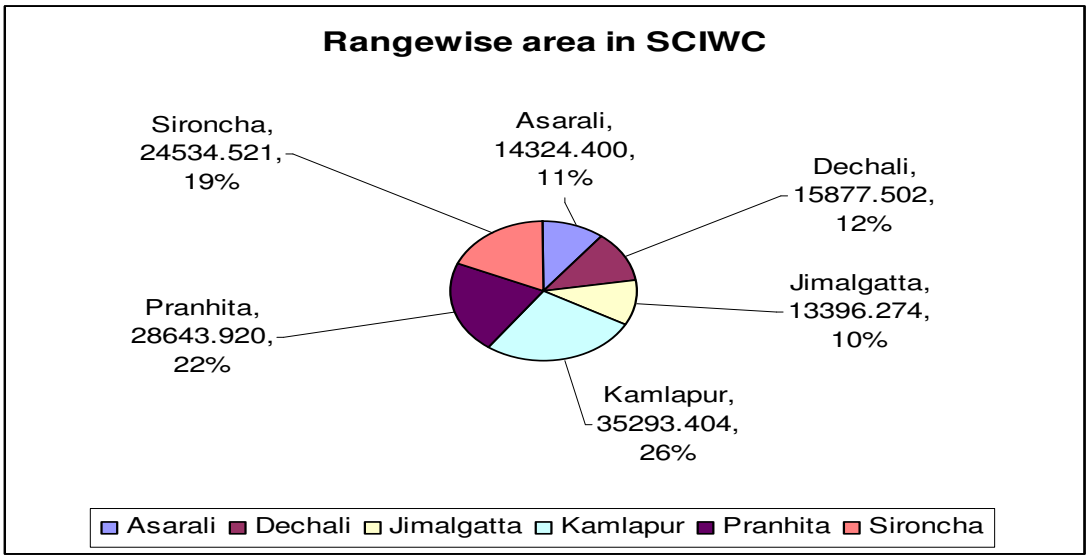
2.1.1.1. This working circle includes better forest areas with respect to growing stock, density, silvicultural availability, terrain and status of natural regeneration. In this working circle, most of the area worked under selection cum improvement working circle during previous working plan period and still conforming to the objectives of this working circle and the area earmarked to FDCM but neither handed over to them nor allotted to any working circle in previous plan and the compartments worked under improvement working circle in previous plan and now conforming to the norms of sci working circle have been included. This working circle includes the areas which have. (1) *Teak* in very good proportion but which can not be worked under concentrated regeneration operations due to terrain and edaphic conditions. (2) Low proportion of *teak* but availability of mature trees of other species is indicated. (3) Mainly miscellaneous species. The second and third types of areas are on sandy soils and if worked under concentrated regeneration i.e. *teak* plantation working circle, it may lead to soil erosion. The forests are of site qualities II to III interspersed with site quality I and IV. Efforts have been taken to avoid the areas near villages and those badly affected by biotic interference.

2.1.1.2. Range wise distribution of forest area under Selection Cum Improvement Working Circle is given in the following table**.**

Table No -60

TABLE SHOWING RANGE WISE AREA IN SCIWC

Range	Area of Range in ha	Area in SCIWC in ha	% w.r.t SCIWC area
Asarali	23,973.768	14,324.400	11%
Dechali	24,070.506	15,877.502	12%
Jimalgatta	21,629.981	13,396.274	10%
Kamlapur	49,083.687	35,293.404	26%
Pranhita	35,396.830	28,643.920	22%
Sironcha	58,343.807	24,534.521	19%
DIVISION	212,498.579	132,070.021	62% wrt Division



SECTION. 2. 2. GENERAL CHARACTER OF THE VEGETATION.

2.2.1.1. The areas allotted to Selection Cum Improvement Working Circle are having *teak* and miscellaneous forests which are capable of producing large and small size timber with bamboo of various degree of dispersal. The terrain is mostly undulating. These forests exhibit a great genetic diversity, crop density is mostly more than 0.5 and is upto 0.9 and in some areas it is of full strength. The site quality varies from II to III with occasional I and IV. Bamboo forms under storey and considerable degree of congestion in the clumps particularly in the areas of Nistar Bamboo Felling Series is seen. The quality, density and composition of the crop changes from place to place and within short distances. The status of natural regeneration of some of the miscellaneous species and *teak* is satisfactory. Therefore, the advantage of this phenomena will be taken up to regenerate the area. Although the growing stock has mainly miscellaneous species, patches of well drained and undulated area support the growth of the *teak*. The forest allotted to this working circle belongs to the following types;

(i) 5A/ Cib - Southern tropical dry *teak* forests.
(ii) 5A / C3 - Southern tropical dry mixed forests.
(iii) 3B / Cib - South Indian moist deciduous forests.

2.2.1.2. The forest is generally well stocked and of quality III and II. On flat tops of hills and in places where underlying rock is exposed and the proportion of sand is less, overwood consists *of Ain, Dhaoda, Lendia, Salai, Mowai, Tendu, Achar, Semal, Bija, Tiwas, Bhirra, Rohan, Karam, Anjan Haldu* etc with varying proportion of *Teak*. In *Teak* areas, *Teak* forms 20 to 25 % of the crop. High quality mixed *teak* forests occur in patches on flat as well as gentle slopes near Garewada, Dodgir Maralpur, Asli and Kollarmarka where quality improves from III to II. Dense under storey of bamboo is present at places. The crop is generally middle to mature aged with degree of advanced growth in the forms of established regeneration. On drier slopes *Salai, Kulu* and *Dhaoda* are seen. Along nala banks *Jamun, Kusum, Arjun* and *Bistendu* are present. In low lying and somewhat moist areas, the regeneration of *Ain* is good. Regeneration of *Teak* is found in the form of profuse seedlings in open areas on gentler slopes with well drained and deep soils. No regeneration is noticed in areas infested heavily with climbers.

SECTION.2. 3. BLOCKS AND COMPARTMENTS

2.3.1.1. Selection cum Improvement Working Circle consists of forest areas to the tune of 132,070.021ha which is 62% of the total plan area. No block formation has been segregated for exclusive management of forests under this working circle. The distribution of the compartments allotted to this working circle have been given in Volume II, appendix no- XVII.

SECTION. 2.4. SPECIAL OBJECTS OF MANAGEMENT

2.4.1.1. The special objects of management are:

(i) To bring normality in the forest

(ii) To improve the quality and to increase the proportion of valuable species by giving preferential treatment to naturally regenerated seedlings and by planting timber species, mainly *teak* in suitable patches.

(iii) To produce large size timber by utilizing the full potential of the site.

(iv) To maintain and improve the soil cover by way of soil and water conservation measures particularly on the principle of water shed management.

(v) Consistent with the above, to derive optimum sustained yield of timber, firewood and bamboo and non timber forest produces.

(vi) To ensure conducive habitat for rare and endangered wildlife.

SECTION. 2.5. ANALYSIS AND VALUATION OF THE CROP

2.5.1.1. ENUMERATION. - Enumeration of growing stock has been carried out by the Survey of Forest Resources Unit Chandrapur during 2002-03 periods with 1% systematic sampling. The result has been computed compartment wise and on this basis compartments have been allotted to this working circle. Compartment wise results of enumeration have been given in Appendix No-II in volume II of this plan.

2.5.1.2. Tables No-61 showing girth class wise number of trees per hectare, girth class in centimeter, basal area in square meter per hectare and growing stock in cubic meter per hectare is given below.

Table No-61

Table showing distribution of trees/ha in SCIWC

Species/ Girth class	16-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	151 & up	Total
Teak	4.94	6.24	5.09	3.98	3.65	2.87	2.40	2.16	1.78	0.09	33.21
Bija	0.67	1.71	2.23	2.08	2.73	1.53	0.75	0.78	0.67	0.14	13.3
Haldu	0.52	1.01	0.97	1.15	1.04	0.78	0.33	0.26	0.24	0.15	6.45
Kalamb	0.58	1.16	1.64	1.56	1.50	1.00	0.95	0.84	0.75	0.00	9.98
Shisham	0.26	0.83	0.80	0.87	0.49	0.52	0.23	0.06	0.07	0.00	4.13
Ain	5.01	5.87	3.91	3.56	3.16	3.12	2.58	2.16	2.01	0.28	31.66
Dhaoda	2.35	4.39	4.11	3.91	3.51	3.00	2.75	1.67	1.18	0.07	26.93
Lendia	6.22	4.84	3.11	2.42	1.96	1.31	0.83	0.22	0.12	0.01	20.77
Garari	11.16	9.31	6.98	6.76	3.98	2.00	0.62	0.21	0.12	0.01	41.14
Other	46.72	65.63	50.71	38.22	27.57	19.01	13.71	10.87	8.91	1.60	283.35
Total	**77.76**	**99.28**	**77.32**	**62.53**	**46.86**	**33.61**	**24.40**	**18.45**	**15.18**	**2.21**	**457.62**
GS/ha	**1.48**	**6.35**	**7.19**	**12.07**	**13.78**	**14.12**	**14.13**	**13.86**	**14.54**	**3.39**	**100.91**
Basal	0.3	1.1	1.7	2.3	2.6	2.6	2.5	2.4	2.5	0.4	18.4

area											

(SCI WC = Selection Cum Improvement Working Circle).

Table No-62

Table showing categories wise and girth wise distribution of trees/ha, basal area and volume in SCIWC

SrNo	Girth Class	No of tree/ha	Basal area / ha (square meter)	Growing Stock/ ha (cubic meter)	No of tree/ha for teak and Group A spp bija, haldu, kalamb, shisham, ain	No of tree/ha Group B other than teak, A, garari, lendia.
1	16-30	77.76	0.3	1.48	14.3	50.72
2	31-45	99.28	1.1	6.35	21.2	63.51
3	46-60	77.32	1.7	7.19	18.8	48.83
4	61-75	62.53	2.3	12.07	17.1	38.22
5	76-90	46.86	2.6	13.78	16.1	27.52
6	91-105	33.61	2.6	14.12	12.8	19.01
7	106-120	24.40	2.5	14.13	10.0	13.71
8	121-135	18.45	2.4	13.86	7.9	10.87
9	135-150	15.18	2.5	14.54	6.7	8.91
10	151&up	2.221	0.4	3.89	0.7	1.60
11	Total	457.62	18.4	100.91	125.7	283.62

2.5.1.3. STOCK MAPPING- Stock mapping of the tract was carried out by the staffs of Working Plan Division Chandrapur-2 during 2003-04 and 2004-05. Help of satellite imageries for the tract was also taken to ascertain the stocking of the tract with ground truthing. Detail of result of stock mapping has been given in Appendix No I.

Table No- 63

Table showing distribution of stockmapping of area in SCIWC

Type	SCI	SCI/PWC	IWC/SCI	Remarks
T I	187.56		19.44	T = Teak
T II	2178.378	118.26	142.56	M = Miscellaneous
T III	3560.148	312.255	116.64	I, II, III, IVa, IVb = Site Quality
T IVa	987.61	1.62	181.264	PL = Plantation
T IVb	69.142			US = Under Stocked
T Total	6991.773	432.135	459.904	NBL = Natural Blank
M I	2128.742		137.722	CL = Cultivation
M II	11291.39	312.338	2159.702	TUW = Total Unworkable area
M III	64651.117	3141.423	8802.807	B = Bamboo
M IVa	12095.616	18.905	2095.798	All area is in hectare.
M IVb	8449.342	47.061	539.364	
M Total	98616.207	3519.727	14973.393	SCI/PWC = Compartments common SCI & IWC
PL	4639.112	30	494.4	SCI/PWC = Compartments common SCI & IWC
US	2222.707		426.533	

NBL	5092.566	25	597.425	
CL	3208.71		4073.747	
TUW	10524.003	25	5097.705	
B I	8572.827	487.83	166.33	
B II	12309.899	1525.89	669.77	
B Total	20882.726	2013.72	836.1	
River bed	287.145			
Total Area	120953.02	3976.862	21025.402	

2.5.1.4. DENSITY AND AGE CLASSES - The density of the stock varies from 0.5 to 0.9 and some under stocked and fully stocked areas intermingled with it. The age of the crop is all aged, mainly, middle to mature with patches of advanced growth and some over matured trees.

2.5.1.5. REGENERATION - Natural regeneration is satisfactory in the areas allotted to this working circle. Regeneration is scanty near the villages due to biotic pressure and recurrence of fire. Establishment of seedlings is hampered in the biotic pressure and fire prone areas.

SECTION. 2.6. SILVICULTURAL SYSTEM.

2.6.1.1. Based on the objects of management, quality and composition of the crop, the silvicultural system prescribed is Selection Cum Improvement to maintain the continuity of management practice adopted in previous plan operation. Natural regeneration will be encouraged by way of subsidiary silvicultural operations. Rigid protection from fire and grazing is to be given to the crop.

SECTION. 2. 7. CHOICE OF SPECIES.

2.7.1.1. As *teak* is the most valuable species, it will be given top priority wherever it occurs. Miscellaneous species to be favoured in the existing crop are *bija, shisham, haldu, ain, kalam, tiwas, dhaora, khair, garari, rohan and lendia* etc. *Semal* and *khair* will be reserved from felling apart from edible fruits and flower yielding species. For protection of medicinal plants, care will be taken so that herbs, shrubs, grasses which are important in respect of medicinal values shall be thriving in perpetuity.

SECTION. 2. 8. HARVESTABLE GIRTH.

2.8.1.1.The study of growth pattern for *teak* has been done and summarized in Chapter VIII of Part-I of this working plan report. On the basis of analysis of growth of *teak* and other species on assuming comparable girth growth in other species as that of *teak*, harvestable girths have been fixed. Site Quality wise results of stem analysis and harvestable girths are as follows:

Table No- 64
TABLE SHOWING SELECTION GIRTH FOR TEAK FOR DIFFERENT SITE QUALITIES

Site Quality	Age in year	Girth (OB) in cm	Harvestable Girth in cm
I	108	240	240.
II	103	190	195

III	94	127	135.
IV	84	105	105.

In case of lendia and khair State Level Committee had recommended harvestable girth at 75 cm and that for garari at 45 cm. As lendia and garari have characteristic to replace other species if given space and utility of these species is for pole and fuelwood, hence their harvestable girths have been fixed at 75cm and 45cm respectively. In case of khair, earlier studies have revealed that after 75 cm girth at breast height, it becomes hollow and katha value declines, hence the harvestable girth is fixed at 75cm. Species have been grouped as Teak, A, B, C or D as follows:

Table No- 65

TABLE SHOWING SELECTION GIRTH FOR TEAK AND GROUP OF SPECIES FOR DIFFERENT SITE QUALITIES

Species/Group	SQ_1	SQ_2	SQ_3	SQ_4
Teak	240cm	195cm	135cm	105cm
Group A	240cm	195cm	135cm	105cm
Group B	240cm	195cm	135cm	105cm

Group C : Lendia and Khair : 75cm
Group D : Garari : 45 cm.
Where:
Group A consists of Ain, Bija, Haldu, Kalamb, Shisham, Tiwas.
Group B consists of Dhaoda, Salai, Mowai and other species not specified as Teak, Group A, Group C or Group D.
Group C consists of Lendia and Khair and
Group D consists of Garari.

SECTION. 2.9.1.1. FELLING CYCLE. Felling cycle has been fixed as 20 years same as that in previous working plan.

SECTION. 2.10. FORMATION OF FELLING SERIES AND COUPES.

2.10.1.1. Total number of felling series carved out of the area allotted to selection cum improvement working circle is 61, 56 full and 5 part. Efforts have been made to retain the felling series as created in previous working plan. Each felling series contains 20 coupes numbering in Roman from I to XX. In previous Working Plan operation period coupe numbering from I to X had been worked out for main felling operation. The present plan report contemplates to work the remaining coupes in the sequence as prescribed in the previous plan i.e. operation will be carried out from coupe number XI to XX and then in cyclic order from I to X. The list of the felling series, felling series wise compartments and coupe wise details of areas have been given in appendix no-XVII in volume II.

SECTION. 2. 11. REGULATION OF YIELD.

2.11.1.1. In previous working plan, the yield calculation for Selection Cum Improvement Working Circle was made on the basis of Sagreiya`s modification of Smythie`s formula. Since the continuity in the working is to be maintained, same formula has been utilised for yield calculation in the present plan.

2.11.1.2. The concept of F. de Liocourt`s law is taken into consideration. It states that in a fully stocked selection forest i.e. in a normal growing stock of uneven aged forests, the number of stems falls down from one diameter/girth class to the next higher

diameter/girth class in a Geometrical Progression (G.P.) bearing a constant ratio. In other words the percentage reduction in the number of stems from one diameter/girth class to the next to that higher diameter/girth class is constant.

2.11.1.3. On the basis of F. de Liocourt, the number of stems in successive girth classes can be represented in a geometrical series. a, ar, ar^2, ar^3, …… . Where ´a` represents the number of stems in the lowest girth class and ar, $ar^2$, $ar^3$, ……etc represent the number of stems in the next successive higher girth classes respectively. ´r` represents the common ratio of the geometrical progression of the number of stems in different girth classes.

Thus if the value of ´r` and the number of stems in any girth class are known, the whole series can be worked out which would give a proportionate distribution of stems in an ideal forest. But in reality such balanced distribution does not exist due to various reasons. For a given stand table, value of ´r` and ´a` can be obtained as follows.

$$a_2 / a_1 = a_3 / a_2 = a_4 / a_3 = a_5 / a_5 = \text{----} = = a_n / a_{n-1} = r.$$

$$r = \frac{(a_2 + a_3 + a_4 + a_5 + \text{----} + a_n)}{(a_1 + a_2 + a_3 + a_5 + \text{----} + a_{n-1})}$$

Or,

$$r = \frac{(a_1 + a_2 + a_3 + a_4 + a_5 + \text{----} + a_n) - a_1}{(a_1 + a_2 + a_3 + a_5 + \text{----} + a_{n-1} + a_n) - a_n}$$

Or,

$$r = \frac{(S_n - a_1)}{(S_n - a_n)}$$

Where, $S_n = (a_1 + a_2 + a_3 + a_4 + a_5 + \text{----} + a_n) =$ Sum of stems of all n girth classes.

a = Number of stems in lowest girth class.

r = Common ratio of the G.P.

and,

$$a = \frac{S(1-r)}{(1-r^n)}$$

2.11.1.4. First of all the actual recruitment to the harvestable girth in all the felling cycle in a rotation has been calculated. Based on that number of stems to be removed in the first cycle has been calculated to ensure sustained or progressively increasing yield in successive felling cycles.

2.11.1.5. For yield calculation, Group A species and Teak have been taken together. Result of stock mapping reveals that major area is under site quality III and other quality areas are mingled with it in patches and are comparatively smaller in extent. Hence calculations have been worked for site quality III. In case of site qualities I, II and IV respective harvestable girths will be adhered to. The yield has been arrived at on the basis of the figures of average number of stems of the species *teak* and Group A, Group B, Group C and Group D per hectare in various girth classes in felling series of S.C.I Working Circle.

2.11.1.6. YIELD CALCULATION: The survival percentage i.e. proportion of stems above harvestable girth class expressed as percentage has been calculated on the

number of stems that should have been there in each girth class if the stock was entirely balanced. These figures have been calculated as per the law of F. de Liocourt. The survival percentage and the number of stems of each girth class reaching harvestable girth are as under following tables:

Table No-66
Table showing the distribution of trees and recruitment to harvestable girth in Group A species including teak

Sr №	Girth Class (cm)	Actual No. of stems / ha.	Ideal No. of stems / ha as per F. de Liocourt`s formula	Survival percentage reaching selection girth %	Percentage of unplanned removal of stems %	Actual percentage of survival %	Stem per ha reaching selection girth	Years required to pass over to next girth class	Average annual recruitment reaching to selection girth
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
I	15-30	14.3	17.8	59	1	58	8.3	6	$R_8 = 1.383$
II	31-45	21.2	16.7	63	2	61	12.9	10	$R_7 = 1.290$
III	46-60	18.8	15.6	67	2	65	12.2	10	$R_6 = 1.220$
IV	61-75	17.1	14.6	72	2	70	12.0	13	$R_5 = 0.923$
V	76-90	16.1	13.7	77	3	74	11.9	14	$R_4 = 0.850$
VI	91-105	12.8	12.8	82	3	79	10.1	15	$R_3 = 0.673$
VII	106-120	10.0	12	88	2	86	8.6	13	$R_2 = 0.662$

VIII	120-135	7.9	11.2	94	1	93	7.3	16	$R_1 = 0.456$
	135-150	6.7	10.5	100	1	99	6.6		
	Total	124.9	124.9						
	151& up	0.7	0.7						
Grand Total		125.6	125.7						

Table No-67

Table showing the distribution of trees and recruitment to harvestable girth in Group B

Sr №	Girth Class (cm)	Actual No. of stems / ha.	Ideal No. of stems / ha as per F. de Liocourt`s formula	Survival percentage reaching selection girth %	Percentage of unplanned removal of stems %	Actual percentage of survival %	Stem per ha reaching selection girth	Years required to pass over to next girth class	Average annual recruitment reaching to selection girth
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
I	15-30	50.72	55.65	27	1	26	13.2	6	$R_8 = 2.200$
II	31-45	63.51	47.13	31	2	29	18.4	10	$R_7 = 1.840$
III	46-60	48.83	39.91	37	2	35	17.1	10	$R_6 = 1.710$
IV	61-75	38.22	33.80	44	2	42	16.1	13	$R_5 = 1.239$
V	76-90	27.52	28.63	51	3	48	13.2	14	$R_4 = 0.943$
VI	91-105	19.01	24.25	61	3	58	11.0	15	$R_3 = 0.733$
VII	106-120	13.71	20.53	72	2	70	9.6	13	$R_2 = 0.738$
VIII	120-135	10.87	17.39	85	1	84	9.1	16	$R_1 = 0.569$
	135-150	8.91	14.73	100	1	99	8.8		
	Total	282.02	282.02						
	151& up	1.60	1.60						
Grand Total		283.62	283.02						

Table No-68

Table showing the distribution of trees and recruitment to harvestable girth in Group C

Sr №	Girth Class (cm)	Actual No. of stems / ha.	Ideal No. of stems / ha as per F. de Liocourt`s formula	Survival percentage reaching selection girth %	Percentage of unplanned removal of stems %	Actual percentage of survival %	Stem per ha reaching selection girth	Years required to pass over to next girth class	Average annual recruitment reaching to selection girth

A	B	C	D	E	F	G	H	I	J
I	15-30	6.22	6.22	32	1	31	1.93	6	$R_4 = 0.322$
II	31-45	4.84	4.66	42	2	40	1.94	10	$R_3 = 0.194$
III	46-60	3.11	3.49	56	2	54	1.68	10	$R_2 = 0.168$
IV	61-75	2.42	2.62	75	2	73	1.77	13	$R_1 = 0.136$
V	76-90	1.96	1.96	100	3	97	1.90		
	Total	18.55	18.55						
	>90	2.22	2.22						
	Grand Total	20.77	20.77						

Table No-69

Table showing the distribution of trees and recruitment to harvestable girth in Group D

Sr №	Girth Class (cm)	Actual No. of stems / ha.	Ideal No. of stems / ha as per F. de Liocourt`s formula	Survival percentage reaching selection girth %	Percentage of unplanned removal of stems %	Actual percentage of survival %	Stem per ha reaching selection girth	Years required to pass over to next girth class	Average annual recruitment reaching to selection girth
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
I	15-30	11.16	11.30	63	1	62	6.919	6	$R_2 = 1.153$
II	31-45	9.31	8.99	80	2	78	7.262	10	$R_1 = 0.726$
III	46-60	6.98	7.16	100	2	98	6.84	10	
	Total	27.45	27.45						
	>60	13.69	13.69						
	Grand Total	41.14	41.14						

Table No -70

RECRUITMENT IN THE FELLING CYCLE

Felling Cycles	R_n = Total recruitment during n^{th} felling cycle.				
	R_n =	Group A + Teak	Group B	Group C	Group D
I	$16 \times R_1 + 4 \times R_2$	9.444	12.056	$13 R_1 + 7 R_2 = 2.944$	$10 R_1 + 6R_2 = 14.18$

2.11.1.7. All the recruitment during the period of working cycle is not realisable because in the first year coupe, recruitment of one year is available and so on till the 20^{th} coupe in which recruitment for 20 years are available. The total realisable recruitment in a working cycle i.e. in a felling cycle can be calculated by the Smythie`s formula modified by Sagreiya`s.

$R_{rn} = ½ [R_n - P(R_n / F - R_x)]$

Where.

R_{rn} = Realisable recruitment during n^{th} felling cycle.

R_n = Total recruitment during n^{th} felling cycle.

P = Period during which initial rate of Recruitment exists.

F = Felling cycle.

Rx = Initial rate of recruitment.

Using above formula recruitments realisable during the respective felling cycles are as follows:

Table No -71

RECRUITMENT REALIZABLE IN THE FELLING CYCLE

Felling Cycle	R_{rn}	Group A + teak	Group B	Group C	Group D
I	R_{r1}	4.64	5.758	1.399	7.175

The recruitment during the first cycle in Group A + Teak, Group B, Group C and Group D will be as follows:

For example: Group A + Teak

FIRST FELLING CYCLE.

R_{r1} = Realizable recruitment during first felling cycle = 4.64

R_{a1} = Balance recruitment which will be available for 2^{nd} felling cycle = 4.80

Above result of recruitment of trees is given in tabular form as follow.

Table No -72

TOTAL RECRUITMENT IN THE FELLING CYCLES IN GROUP A + TEAK

Cycle	Accruing	Realizable	Accumulating	Total realizable in Cycle
First Cycle	9.444	4.64	4.80	4.64

Table No -73

TOTAL RECRUITMENT IN THE FELLING CYCLES IN GROUP B

Cycle	Accruing	Realizable	Accumulating	Total realizable in Cycle
First Cycle	12.056	5.758	4.298	5.758

Table No -74

TOTAL RECRUITMENT IN THE FELLING CYCLES IN GROUP C

Cycle	Accruing	Realizable	Accumulating	Total realizable in Cycle
First Cycle	2.944	1.399	1545	1.399

Table No -75

TOTAL RECRUITMENT IN THE FEL LING CYCLES GROUP D

Cycle	Accruing	Realizable	Accumulating	Total realizable in Cycle
First Cycle	14.18	7.175	7.005	7.175

We have already stock in hand which will be available for selection. Thus the annual realizable yield per hectare will be as follows.

Table No -76

ANNUAL REALIZATION IN THE FELLING CYCLES IN GROUP A + TEAK

Stock in hand	Realizable recruitment	Annual realizable yield from the coupe (trees/ha)
7.4	4.64	12.04

Table No -77
ANNUAL REALIZATION IN THE FELLING CYCLES GROUP B

Stock in hand	Realizable recruitment	Annual realizable yield from the coupe (trees/ha)
10.51	5.76	16.26

Table No -78

ANNUAL REALIZATION IN THE FELLING CYCLES GROUP C

Stock in hand	Realizable recruitment	Annual realizable yield from the coupe (trees/ha)
4.18	1.40	5.58

Table No -79

ANNUAL REALIZATION IN SUCCESSIVE FELLING CYCLES GROUP D

Stock in hand	Realizable recruitment	Annual realizable yield from the coupe (trees/ha)
20.67	7.18	27.85

Percentage realization of trees per hectare in different felling cycles.

Table No -80

PERCENTAGE LIQUIDATION IN SUCCESSIVE FELLING CYCLES IN GROUP A + TEAK

Liquidation in cycle	At hand	Accruing	Total	Realizable	Total liquidated	Percentage liquidation	As per GOI guidelines only 50% of normal yield is to be harvested. 50% of Yield
1 cycle	7.4	9.44	16.84	4.64	12.04	72%	36%

Table No -81

PERCENTAGE LIQUIDATION IN SUCCESSIVE FELLING CYCLES IN GROUP B

Liquidation in cycle	At hand	Accruing	Total	Realizable	Total liquidated	Percentage liquidation	guidelines only 50% of normal yield is to be harvested. 50% of Yield
1 cycle	10.51	12.06	22.57	5.76	16.27	72%	36%

Table No -82

PERCENTAGE LIQUIDATION IN SUCCESSIVE FELLING CYCLES IN GROUP C

Liquidation in cycle	At hand	Accruing	Total	Realizable	Total liquidated	Percentage liquidation	guidelines only 50% of normal yield is to be harvested. 50% of Yield
1 cycle	4.18	2.94	7.12	1.40	5.58	78%	39%

Table No -83

PERCENTAGE LIQUIDATION IN SUCCESSIVE FELLING CYCLES IN GROUP D

Liquidation in cycle	At hand	Accruing	Total	Realizable	Total liquidated	Percentage liquidation	guidelines only 50% of normal yield is to be harvested. 50% of Yield
1 cycle	20.67	14.18	34.85	7.18	27.85	80%	40%

Table No -84

YIELD DETERMINATION IN RESPECTIVE GROUPS OF SPECIES

GROUPS	% removal of available trees	No of trees/ha to be removed in the felling cycle from each coupe	In terms of number out of available selection trees
A+Teak	36%	6.02	4 out of 10
B	36%	8.14	4 out of 10
C	39%	2.74	4 out of 10
D	40%	13.93	4 out of 10

2.11.1.8.. As the working plan revision is contemplated after 10 years, the stock at hand will be taken as safe guard from excess removal. It is seen from above table that after removal of prescribed yield coupe will be having selection tree in the form of accumulated trees and some balanced trees. Thus the structure of composition is maintained after removal of selected trees and sustenance of yield is ensured for perpetuity. Since the number of trees as yield is varying, it is not possible to give exact yield per coupe. Yield will be estimated only after carrying out 100% enumeration of the trees above selection girth. The yield is also dependent of site quality and accordingly, the yield will be calculated.

2.11.1.9. VOLUME DETERMINATION IN RESPECTIVE GROUPS OF SPECIES:

For sake of reference for first felling cycle yield will be as follows:

Average area in SCIWC for working per year = 6604 ha
Assuming 50% area is having density > 0.4, area available will be (say) = 3300 ha

Table No -85

GROUPS	No of trees/ha	Harvestable girth in cm	Form Factor for timber	Volume in m^3	Timber in m^3	Fuel beats
A+Teak	6.02	135	0.660	13100	13100	3900
B	8.14	135	0.660	17700	17700	5300
C	2.74	75	0.200	1808		2200
D	13.93	45	0.075	3500		1800
Total	30.83			43800	30800	13200

Where,
Group A + teak 30% of volume of timber, taken as fuel beat.
Group B 30% of volume of timber is taken as fuel beat.
Group C 100% of total volume is taken as fuel beat.
Group D 100% of total volume is taken as fuel beat.
Round off figures have been taken.

SECTION.2.12 . AGENCY OF HARVESTING .

2.12.1.1. Demarcation of coupe and marking of trees for felling will be carried out departmentally to meet the silvicultural and technical requirement. Felling of trees and haulage of the felled material will be worked as per the directives issued by the Government. But cut back operations and other regeneration activities will be done departmentally.

SECTION .2.13. DEMARCATION OF COUPES, PREPARATION OF TREATMENT MAPS AND MARKING TECHNIQUES.

2.13.1.1.DEMARCATION . Except 1st coupe due for working, rest of the coupes will be demarcated one year in advance of the main felling as given in sequence for working in appendix no. XVII in volume II. 1st coupe due for working will be demarcated, marking of trees will be carried out and felling will be executed during first year of operation of this plan to streamline the working of annual coupe. Demarcation and marking will be carried out as per the prescription given Chapter XII for Other Important Regulations.

2.13.1.2.PREPARATION OF TREATMENT MAP . After demarcation of the coupe, treatment map will be prepared by the Range Forest Officer and duly supervised by Assistant Conservator of Forests and inspected by Deputy Conservator of Forests In Charge of the Division. The treatment map will show the following type of areas.

2.13.1.3. TYPE A - PROTECTION AREA . Protection Area which includes the steep slopes above 25º (degrees), areas likely to erode and a strip of 20 mt around nala banks. It includes the following area .

(i) Areas with steep slopes more than 25°.
(ii) Areas eroded or liable for erosion.
(iii) 20 meter wide strip on either side of banks of the water course.
(iv) Riparian Zones .
(v) Sacred Groves .

2.13.1.4.TYPE–B . UNDER STOCKED AREAS. It includes the areas with crop density less than 0.4 but exceeding 0.5 ha in extent at one place .

2.13.1.5.TYPE-C . (a) GROUP OF YOUNG POLES . It includes patches of well grown pole crop of *teak* and other miscellaneous species suitable for retention as a future crop in addition to old plantations. The patch will not be less than half hectare. These patches will be spaced out for healthy growth.

(b) TEAK PLANTATION. Teak plantation taken during previous plans will be included in this category and treatment will be as per the prescription for old teak plantation i.e. thinning will be done in the year as per sequence for that given for old teak plantation in Teak Plantation Working Circle.

2.13.1.6.TYPE – D- WELL STOCKED AREAS . Site Quality of the area will be first determined. Areas with crown density above 0.4 will be included in this category .

2.13.2.TREATMENT .

2.14.2.1. Following types of treatment will be given to areas as classified above. If necessary, nala bunding and gully plugging shall be done over the complete area of the coupe as per treatment map. The area wise treatments proposed are as follows .

(i) **Type A - Protection Area .** Felling is not prescribed.

(ii) **Type B – Under stocked Area .** *Teak* and suitable miscellaneous species shall be promoted with tending of natural regeneration. Dead and malformed trees will be cut back.

(iii) **Type C – Pole Crop or advanced growth** . No planting will be done. Thinning will be done in the young pole crop to create interval between remaining trees to 1/3 of the average height as a thumb rule. *Teak* plantation areas shall be treated as per prescriptions provided for *teak* plantations working circle of this plan and such type of areas have been excluded from this working circle.

(iv) **Type D - Well Stocked Areas .** No planting will be done. Felling will be carried out as provided under Marking Rules.

2.13.3.MARKING RULES AND MARKING TECHNIQUES .

2.13.3.1. Marking Rules. Marking will be done in the same year in which demarcation will be done. Before actual marking, sample plots of size 60m X 60 m with intensity 5 to 10 % in each section of coupe will be taken. Sample plots should not be at the edge of the coupe. The distance between the centers of two sample plots should not be less than 200 m. In sample plots complete enumeration of trees of approach girth class and above selection girth will be done and the data will be compiled to determine the number of trees available for marking for felling.

2.13.3.2. Then the site quality will be determined. In the same coupe, if a patch of more than 0.5 ha is having different quality, the enumeration data should be collected separately. The abstract of enumeration data will be prepared site quality wise. Then the no of stems to be removed from harvestable girth class is determined on the basis of groups of different species. In marking of the above surplus and mature trees, silvicultural, social and financial aspects of the species should be taken into account.

2.13.3.3. Marking technique has been described in detail in chapter XII under the head `Other Important Regulations`.

2.13.3.4. The marking rules for each type of area is prescribed as follows-
(i) TYPE – A- PROTECTION AREAS . No marking shall be done as felling is not prescribed. Dead trees will be removed leaving two dead trees per hectare to act as snags and dens. The root suckers will be encouraged. Bush sowing of suitable species will be carried out by the beat guards/van majoors.

(ii) TYPE – B- UNDERSTOCKED AREAS. Marking will not be carried out except-

(a) All the dead trees.
(b) All live high stumps to be cut as close to the ground as possible and dressed.
(c) All coppice shoots of valuable species. Valuable species includes *teak*, *ain, bija, dhaoda, mowai* etc. Malformed stumps and seedlings will be cut back, flush to the ground.

(iii)TYPE –C – (a) POLE CROP . Natural pole crop of not less than 0.5 hectares shall be spaced out in such a way that an average spacing of 1/3 of height of poles shall be maintained between two rows. The healthy poles will be preferred for retention.

(b) PLANTATION: Artificially raised pole crop will be thinned as per thinning schedule given under teak plantation working circle.

(iv) TYPE – D- WELL STOCKED AREA. All edible fruit yielding trees will be reserved from felling.

(a) All the trees of selection girth and approach class of each group i.e. A, B, C & D will
be enumerated before marking in 15 cm girth classes.
(b) Climbers will be cut.
(c) Entire multiple coppice shoots or pole crops will be marked for felling.
(d) Group wise trees including t*eak* trees preferably of coppice origin and that of harvestable girth and above will be marked for felling as prescribed under yield regulation. Those harvestable trees which hinder growth 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 trees of coppice origin while retaining the trees of seedling origin as far as possible. The trees which are not likely to survive till the next felling cycle will be preferred for removal.
(e) Irrespective of girth class, all malformed and dead trees will be marked for felling. Malformed tree means tree with straight clear bole less than 2.5 meter in height from the ground level.

SECTION .2. 14 . SOIL AND MOISTURE CONSERVATION WORKS .

2.14.1.1. The soil and moisture conservation works shall be taken up along with marking operation and completed before onset of monsoon in the next financial year. The soil and moisture conservation works shall include gully plugging and nala bunding. These works shall be taken up after preparation of a detailed treatment map of the area.

SECTION .2. 15. REGENERATION . Regeneration is achieved in two ways. (1) artificial and (2) natural.

(A) NATURAL REGENERATION.

2.15.1.1. It is the best source for getting the quality growing stock provided the available natural regeneration is well protected from its worst enemies mainly fires, grazing and weeds. Weeds in natural regeneration areas cause inter spatial competition

which results in improper growth of desirable species. These areas can be categorized into two groups.

(1) AREAS WITH ADEQUATE REGENERATION. Regeneration will be treated as adequate if the area contains more than 625 seedling per ha. In such natural regeneration areas, in the next year of main felling, systematic weeding should be carried out and continued thereafter until the plants are free from the risk of competition. These areas will be rigidly protected from fires, by resorting to rigid fire protection measures applicable to current coupe of working. The order of preference for favouring miscellaneous species is *bija, shisham, haldu, ain, kalam, tiwas, dhaoda, bhirra, rohan*, and *lendia.* For all purposes natural regeneration seedling should be treated at par with the planted seedlings.

(2) AREAS WITH INADEQUATE REGENERATION . In these areas, seed sowing of suitable species will be done by staff apart from tending of available natural regeneration in the next year of main felling.

(B) ARTIFICIAL REGENERATION : In Selection Cum Improvement Working Circle, artificial regeneration is not proposed as the area under has adequate regeneration. In the area where regeneration is not adequate only then artificial regeneration is proposed mainly in B Type area.

2.15.1.2. The areas which are deficient in natural regeneration shall be supplemented by artificial regeneration of suitable species of *teak* and other important miscellaneous species such as *dhaoda, ain, arjun, tiwas, Shivan, chinch, jamun, ber, kulu, biba, anjan, apta, amba* etc through seed sowing, bush sowing and dibbling of seed of these species by field staff.

2.15.2.METHOD OF PLANTING .

2.16.2.1. In the area where planting is done, well spaced natural regeneration seedlings and rooted stock is expected to be taken advantage of. The intention is to have an overall plant population of 2500 plants per ha. Hence the whole area of these category should be marked with line transects at 2 m x 2 m. This marking should be done on the map too. Thereafter each of the marked points should be examined as to whether a pit is to be dug there or not, based on the following criteria.

2.15.2.2.Pit not to be dug –(a) If within a radius of one meter a seedling of natural origins exists. **OR (b)** If the mark comes within the influence zone of a standing tree. Influence zone for various size trees may be taken as given in table below.

Table No -86

TABLE SHOWING THE INFLUENCE ZONE OF TREES

SrNo	Girth Class in cms	Influence zone in meter
1	15-30	3
2	31-45	4
3	46-60	5
4	61-75	6
5	76-90	7
6	> 90	8

All the marks where pits are not to be dug should be crossed on the treatment map. Pit of the size 30 cm x 30 cm x 30 cm should be dug at other points. Such plantation in one coupe should not exceed 20 hectares.

SECTION –2. 16. SUBSIDIARY SILVICULTURAL OPERATIONS.

2.16.1.1. These works shall be carried out in the subsequent years of the main felling. These works will be carried out departmentally as below.

2.16.1.2.CUTTING BACK OPERATION (CBO). CBO shall be carried out in the next year of main felling. The operations will be confined only to D type areas. These operations are listed below.

(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 interfering with the growth of regeneration shall be removed.
(iv) All growth of inferior species which are likely to interfere with the growth of *teak* and valuable miscellaneous species shall be cut.
(v) All malformed, suppressed and damaged advanced growth shall be cut back.

2.16.1.3.CLEANING. Cleaning operations shall be carried out in the sixth year of main felling. The following operations shall be carried out.

(i) Climber cutting.
(ii) All dead, badly damaged and uprooted trees shall be cut.
(iii) Coppice shoots, except one vigorously growing per stump where there is absence of advance growth of seedling origin (natural or planted) shall be cut.

SECTION-2. 17. OTHER REGULATIONS. Protection is of paramount importance for obtaining natural regeneration.

2.17.1.1.PROTECTION FROM FIRE . Natural regeneration is badly damaged due to fire. Fire causes annihilation of natural or artificial seedlings. Hence, such areas will be rigidly protected from fire. It will be worthwhile to get the fire protection done from JMFCs and pay them the amount in lieu of the area protected.

2.17.1.2.GRAZING CONTROL. Grazing causes severe damage to establishment of regeneration . Due to grazing, young succulent, leading shoots are grazed/browsed or trampled by the animals. The areas after main felling shall remain closed to grazing for a period of five years. The closed areas shall clearly be mentioned in grazing licenses and people shall be made aware about closure of the coupes. In order to increase the carrying capacity of the area, palatable grasses shall be sown and villagers will be motivated to harvest the fodder for stall feeding. After removal of closure of grazing, rotational grazing will be followed based on the carrying capacity of the area.

2.17.1.3.PARTICIPATION OF LOCAL PEOPLE. The local people shall be made aware of the importance of protection to the forests from fire, illicit grazing, illicit cutting and encroachment. Participation of local people shall be encouraged in protection and afforestation of forests through Joint Forest Management as far as possible. For this purpose, regular awareness campaigns shall be arranged to explain the importance and benefit of regeneration and protection of forests. Village Forest Protection Committees shall be formed and a comprehensive forest protection scheme shall be undertaken under JFM.

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CHAPTER – III

WORKING PLAN FOR THE IMPROVEMENT WORKING CIRCLE

SECTION :3. 1 : GENERAL CONSTITUTION OF THE WORKING CIRCLE

3.1.1.1: Improvement Working Circle includes areas which were allotted to Improvement Working Circle in previous Plan of Shri A.P.Deshmukh for the tract dealt with and still not so much improved, so as to be qualified for inclusion in other working circle. It also contains some area allotted to Selection Cum Improvement Working Circle and which have degraded due to biotic interference. The area has potential to improve and yield large size commercial timber of teak and other miscellaneous species on sustained basis in future if improved. The area is mostly under stocked but contains sizeable patches of well stocked forests. The site is suitable for taking up improvement operations and may be allotted to Forest Protection Committees under the Joint Forest Management Programmes.

3.1.1.2: Area allotted to Improvement Working Circle is 56,086.858 ha. The range wise distribution of area under this working circle is given as follows:

Table No-87

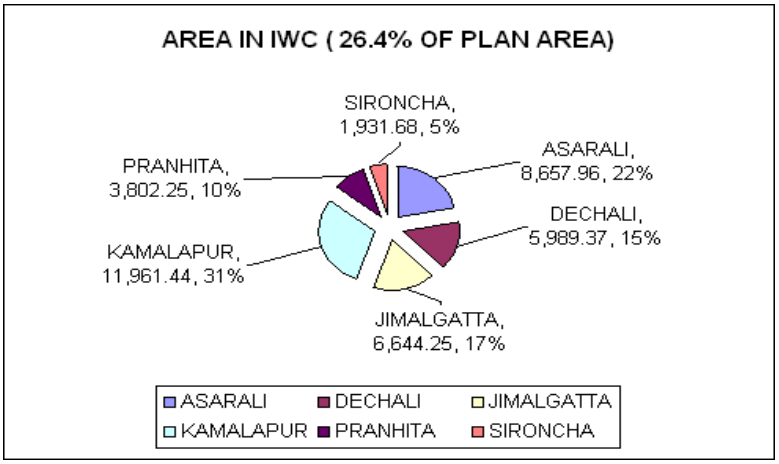
TABLE SHOWING RANGE WISE AREA IN IWC

SrNo	Range	Area of Range	Area in IWC	% wrt IWC area
1	Asarali	23,973.768	8,657.961	15%
2	Dechali	24,070.506	5,989.374	11%
3	Jimalgatta	21,629.981	6,644.252	12%
4	Kamlapur	49,083.667	11,961.438	21%
5	Pranhita	35,396.830	3,802.250	07%
6	Sironcha	58,343.807	19,31.681	34%
	DIVISION	212,498.579	56,086.858	26.4% wrt Division

Table No-88

PIE CHART SHOWING RANGEWISE DISTRIBUTION OF AREA IN IWC

RANGE	AREA
ASARALI	8,657.96
DECHALI	5,989.37
JIMALGATTA	6,644.25
KAMALAPUR	11,961.44
PRANHITA	3,802.25
SIRONCHA	1,931.68
TOTAL	56,086.86



SECTION :3. 2 : GENERAL CHARACTER OF THE VEGETATION :

3.2.1.1: The forests are inferior both in quality and composition of valuable species. Prevalent site quality is IV and at places improves to III. Site qualities II and I areas are intermingled with in patches which cannot be isolated. Density varies from 0.4 to 0.6 and above. At places, density is below 0.4. Some dense patches are also interspersed. Number of open patches and scrubby growth are common. Due to proximity to human habitation, the biotic pressure is heavy. The treatment prescribed during late fifties and sixties and continued in seventies, for bulk of the area was subjected to nistar extraction which was attended without any control. Some of the areas were without any treatment for very long time. The crop consists of mainly *anjanwak*, *garari, ain, mahua, aonla, salai, mowai, khair, surya, bel, tendu, lendia, and achar* with patches of *bija, rohan, dhaoda.* T*eak* appears in some patches over better soil. *Hingan, bharati, lokhandi, dikamali, kharata* appear as shrubs. Common climbers are *chilati, iruni, kukranji.* At places bamboo is seen. Undergrowth is scanty due to heavy grazing. Fires are common. Unsound trees are common. Natural regeneration of all species is patchy and poor. Due to biotic pressure establishment of seedlings is hampered.

SECTION :3. 3 : SPECIAL OBJECTS OF MANAGEMENT :

3.3.1.1. Following are the special objects of management of the forests included in this working circle:

(i) To maintain and improve the density, composition and condition of the growing stock through silvicultural practices.

(ii) To help natural regeneration of various species to establish and supplement the same by taking up afforestation works in under stocked areas.

(iii) To get maximum sustained outturn of small sized timber and firewood which are in local demand for nistar as far as possible.

(iv) To check soil erosion by creating and maintaining proper vegetative cover for preserving the site and thus increasing the productive capacity of the soil in order to make it suitable for luxuriant vegetative growth.

SECTION :3.4 : ANALYSIS AND VALUATION OF THE CROP :

3.4.1.1: 1% systematic sampling of the growing stock of the area had been carried out by the SOFR unit of this Working Plan Division Chandrapur II during 2002-03. The result has been computed range wise and compartment wise. Compartment wise results have been given in appendix no II in volume II of this plan. Important species wise and girth wise result is reproduced here for reference. (Girth class is in centimeter and number of trees is in number per hectare.)

Table No- 89

TABLE SHOPWING THE NUMBER OF TREES PER HECTARE AS PER 2002-03 ENUMERATION IN IWC.

Species/girth class	teak	bija	haldu	kalam	shisham	dhaoda	lendia	garari	others	total
15-30	5.3	1.2	1.1	0.7	0.1	1.5	5.5	6.3	47.3	69.0
31-45	5.4	1.5	1.4	0.4	0.4	2.0	4.1	9.8	52.1	77.1
46-60	4.7	0.9	0.9	0.6	0.6	2.3	2.8	9.0	43.7	65.5
61-75	4.0	1.0	0.6	0.7	0.6	2.8	1.8	7.5	30.9	49.9
76-90	3.4	1.2	0.4	0.6	0.3	2.5	0.9	4.2	23.0	36.5
91-105	2.7	0.6	0.3	0.4	0.2	2.0	0.7	1.5	15.7	24.1

106-120	2.3	0.6	0.2	0.4	0.2	1.2	0.2	0.4	10.0	15.5
121-135	1.6	0.5	0.0	0.2	0.1	0.5	0.2	0.2	6.5	9.8
136-150	0.9	0.3	0.0	0.2	0.1	0.3	0.1	0.3	5.6	7.8
>150	0.7	0.1	0.0	0.3	0.0	0.1	0.1	0.0	2.2	3.5
Total	31.0	7.9	4.9	4.5	2.6	15.2	16.4	39.2	237.0	358.7

Table No-90

TABLE SHOWING THE COMPARISON OF GROWING STOCK DURING 1985-86 to 2002-03 .

girth class	2002-03	1985-86	Difference	% increase
15-30	69.0	66.42	(+)2.6	4%
31-45	77.1	70.39	(+)6.7	10%
46-60	65.5	43.34	(+)22.2	51%
61-75	49.9	29.55	(+)20.4	69%
76-90	36.5	19.34	(+)17.2	89%
91-105	24.1	10.10	(+)14.0	139%
106-120	15.5	6.94	(+)8.6	123%
121-135	9.8	3.00	(+)6.8	227%
>135	11.3	7.49	(+)3.8	51%
Total	358.7	256.61	(+)102.1	40%

Comparison of enumeration results in IWC areas reveals that there is increase in over all growing stock in the span of 15 years. It also reveals that increase in lower classes is not so prominent. Hence, regeneration is not adequate. Total growing stock per hectare is 73 cubic meter.

Table No-91

Table showing stock mapping result for IWC

Type	IWC	IWC/PWC	IWC/SCI	IWC/FDCM	NOTE:-
T I	53.812		19.44		T = Teak
T II	98.471		142.56		M = Miscellaneous
T III	610.852		116.64		I, II, III, Iva, IVb = Site Quality
T Iva	347.691		181.264		PL = Plantation
T IVb	7				US = Under Stocked
T Total	1117.826		459.904		NBL = Natural Blank
M I	275.049		137.722		CL = Cultivation
M II	2178.898		2159.702		TUW = Total Unworkable area
M III	14819.943	185.031	8802.807	23.099	B = Bamboo
M Iva	5802.566		2095.798		All area is in hectare.
M IVb	7761.77		539.364		
M Total	30338.226	185.036	14973.393	23.099	
PL	618.52	20.2	494.4		
US	456.618		426.533		
NBL	5987.147		597.425	63.205	
CL	10238.309		4073.747	277.908	
TUW	16682.074		5097.705	341.113	
B I	1206.33	12.15	166.33		
B II	2215.542		669.77		
B Total	3421.872		836.1		
Disforest	310.497				
Total Area	48766.826	205.236	21025.402	364.211	

SECTION :3.5 : SILVICULTURAL SYSTEM :

3.5.1.1: Based on the objectives of management and general conditions of the crop the most suitable silvicultural systems is to have improvement felling to facilitate the crop supplemented with artificial and natural regeneration.

SECTION :3. 6: METHOD OF TREATMENT:

3.6.1.1: The basic aim to constitute this working circle is to improve the quality and composition of the growing stock. Therefore, the felling in these forests will be carried out purely on the basis of silvicultural considerations. The following operations will be carried out:

(i) Removal of dead, dying (where one third top of clear bole is dead) and diseased trees.
(ii) Thinning in congested patches.
(iii) Removal of mature trees which are not likely to survive till next felling cycle.
(iv) Where the density of crop is below 0.4, removal of the malformed and crooked trees.
(v) Raising of plantation of teak and other economically important species, without disturbing, as far as possible, existing growth, with the help of joint forest management.

SECTION :3. 7 : FELLING CYCLE :

3.7.1.1: A felling cycle of 20 (twenty) years for the purpose of improvement has been prescribed.

SECTION :3. 8 : FORMATION OF FELLING SERIES AND COUPES:

3.8.1.1: As far as possible, the felling series constituted in previous plan have been retained. The sequence of coupes has also been maintained without hampering the continuity of the operations to the areas. 26 felling series have been constituted. Each felling series has 20 coupes. Sequence of coupes to be worked will start from coupe number XI to XX during the plan period of this plan. As coupes numbering from I to X had been worked during previous plan period operation. Felling series wise details of compartments and areas contained therein have been given in appendix number **XVIII** in volume II of the plan .

SECTION :3. 9 : REGULATION OF YIELD :

3.9.1.1: As the felling prescribed in this improvement working circle is only improvement felling, no yield calculation has been worked out.

SECTION :3. 10 : CHOICE OF SPECIES:-

3.10.1.1: If possible, with the assistance of forest protection committees and keeping in view the suitability of site for raising artificial regeneration, choice of species will be made. Species like *teak* not more than 50%, *ain, bija, shisham, haldu, lendia, mowai,*

salai, kusum, char, aonla, ran amba, chinch, hirda, beheda, kulu, bamboo etc may be raised as per the site suitability and demands / choice so required by people.

SECTION :3.11 : IMPLEMENTING AGENCIES :

3.11.1.1: Fellings shall be carried out as per the rules prescribed in the plan. It should be preferably done departmentally. However protection and plantation works may be done as per the Government guidelines under Joint Forest Management and duly sanctioned Micro Plans. Micro Plan prescriptions should be in consonance with the silvicultural prescriptions given in this plan.

SECTION :3.12 : METHOD OF EXECUTING FELLINGS:

3.12.1.1: DEMARCATION: Except for 1st coupe in the sequence of working of this plan period, coupes will be demarcated one year in advance of the main felling as given in the chapter XII, Other Important Regulations of the plan. But 1st coupe (i.e. coupe number XI) will be demarcated in the first year of operation and main felling work will be done in the same year where as in other coupes, felling will be in the following year.

3.12.2.1:PREPARATION OF TREATMENT MAP :- After demarcation of coupe is over, Range Forest Officer will inspect the area and will prepare a treatment map for the same and it shall be verified by the Assistant Conservator of Forests/ Deputy Conservator of Forests after thorough inspection of the area. The treatment map thus prepared will be submitted to Deputy Conservator of Forests in Charge of Division, who will after sample checking give sanction to it. The treatment maps will show the following areas:

3.12.2.2: TYPE – A : PROTECTION AREAS :- It will include following areas:
(a) The area having steep slopes i.e. more than 25º.
(b) Eroded areas or areas liable to erosion.
(c) 20 meter wide strip on either side of water courses.
(d) Riparian Zones.
(e) Sacred groves

3.12.2.3:TYPE – B : UNDERSTOCKED AREAS :- It will include the forests having less than 0.4 densities are included in this category.
In these areas marking shall be done in the following manner: (1) All dead trees will be marked for felling and (2) All live high stumps will be marked for felling.

3.12.2.4:TYPE – C : (a) GROUPS OF YOUNG POLES:- Silvicultural thinning shall be done as per stand table for teak prepared by FDCM. The patches of not less than 1(one) hectare shall be identified having advance growth of any species and it shall be spaced out to one third of the top height, while retaining the vigorous and straight poles. The thinning shall be done in such a manner that epicormic branches do not come up.
(b) OLD PLANTATION:- Thinning of old teak plantation will be carried out as per schedule given in Teak Plantation Working Circle of this plan.

3.12.2.5:TYPE – D : WELL STOCKED AREAS:- The areas having forests more than 0.4 densities are included in this category The following operations will be carried out:
(i) All dead trees except two per ha will be marked and felled.
(ii) All high live stumps shall be cut.

(iii) Where natural regeneration through seedlings is deficient, coppice shoots shall be reduced to one per stool. Otherwise coppice shoots shall be cut off to have high forests in future.
(iv) The over matured trees of girth over breast height more than 120 cm shall be marked for removal, provided it does not create a permanent gap in the canopy.

SECTION:3. 13 :MARKING RULES:-

3.13.1.1: Marking will be done in the same year in which demarcation will be done. Soon after the receipt of approved treatment map, marking will be done. The marking technique is described in detail in the chapter XII, under Other Important Regulations of this plan. Following marking rules are laid down for general guidance:
(i) All climbers which are not of medicinal values will be cut.
(ii) All pollarded trees will be cut back.
(iii) All stumps of illicitly cut trees still alive will be dressed to produce strong coppice shoots, if natural regeneration is deficient and coppice regeneration is supplementing it.

3.13.1.2: The marking rules for each type of area, besides unwanted climber cutting will be as follows:

3.13.1.3: TYPE A: PROTECTION AREA: - Only dead trees will be marked for felling unless they are required to be retained for site protection.

3.13.1.4: TYPE B: UNDERSTOCKED AREA: All edible fruit and flower yielding trees will be reserved from felling. The following trees will be marked for felling:
(i) All dead and malformed trees after retaining two dead trees/ha.
(ii) All but one vigorously growing coppice shoots per stool. (If it is essential to retain the coppice shoot.)
(iii) All live high stumps.

3.13.1.5: TYPE C: (a) GROUPS OF YOUNG POLES: - Silvicultural thinning shall be done as per yield table for teak. For the other species also table for teak will be used assuming that growth pattern of other species also follow the same as in case of teak. (Though it is not the case in the nature but to have control in thinning it is necessary.) The patches of not less than 1 hectare shall be identified having advance growth of any species and it shall be spaced out to one third of the top height, while retaining the vigorous and straight poles. The thinning shall be done in such a manner that epicormic branches do not come up. In the natural young crop, thinning marking will be done on the basis of weighted average gbh and site quality with the help of yield table or normal stand table as described in chapter IV for teak plantation working circle of this plan.
(b) TEAK PLANTATION: Teak plantation will be worked as per the schedule given in Chapter IV of this plan.

3.13.1.6:TYPE D : WELL STOCKED AREA :- All edible fruit and flower yielding trees such as *moha, char, tendu, aonla, chinch, bel, sitafal*, and trees of *kulu* will be reserved from felling. The following trees will be marked for felling:
(i) All dead and malformed trees. A tree will be treated as malformed if it does not have a clean bole up to at least 2 m above the breast height.
(ii) All live and dead high stumps.

(iii) All but one vigorously growing coppice shoots per stool where the stem density is less and natural regeneration through seedling is inadequate. Otherwise coppice shoots should be marked for felling.
(iv) Procedure and other rules for coupe marking given in Chapter II under SCI WC in this plan will be followed.
(v) Bamboo working will be done as per the prescriptions given in Bamboo (Overlapping) Working Circle and rules thereunder.

SECTION: 3. 14: REGENERATION:

3.14.1.1: NATURAL REGENERATION:-Area containing good natural regeneration will be identified in the coupe and marked on the treatment map. Silvicultural operations as required will be carried out and the regeneration will be given protection.

3.14.1.2: ARTIFICIAL RRGENERATION AND CHOICE OF SPECIES:-Areas which are deficient in Natural Regeneration shall be supplemented with artificial regeneration. The choice of species will mainly depend upon local demand and suitability of the species for the site. Species like teak not more than 50%, *ain, bija, shisham, haldu, lendia, mowai, salai, kusum, char, aonla, ran-amba, chinch, hirda, beheda, kulu, bamboo* etc may be raised as per the site suitability and local requirement.

3.14.1.3: As these areas are near to human habitation and are prone to biotic pressure, it is recommended that local people as stake holders should be actively involved in regeneration of the forest through the instrument of Joint Forest Management. Otherwise the deteriorating conditions will change and success of natural or artificial regeneration of the area will get jeopardised as in earlier efforts**.**

3.14.1.4: TECHNIQUE FOR RAISING PLANTATIONS:- The plantations will be raised using standard planting techniques and duly approved by the competent authority.

SECTION:3.15: SOIL AND MOISTURE CONSERVATION WORKS:

3.15.1.1: Soil and moisture conservation works will be carried out after the preparation of treatment map and approved by the Deputy Conservator of Forests. The model of soil and moisture conservation works will be as per approved model by the competent authority. Efforts should be in a direction that leads in enhancing the vegetal cover and retarding the soil run off and retention of moisture regime to the tract. Works shall be completed before the onset of Monsoon. Quantum of work will depend upon the site requirement and duly sanctioned by competent authority.

SECTION :3.16 : SUBSIDIARY SILVICULTURAL OPERATIONS :

3.16.1.1: CUTTING BACK OPERATIONS : Cutting Back Operations will be carried out in the next year of the main felling in the area. (a) All badly damaged trees not likely to recover will be cut. (b) All climbers which are not of ecological and economical values will be cut.

3.16.1.2: CLEANING :- Cleaning will be carried out during the fifth year of the main felling operations as follows:
(a) All climbers which are not of ecological and economical values will be cut.

(b) Coppice shoots, if required, will be reduced to one per stool.
(c) Inferior growth which may interfere with the teak or miscellaneous species of choice will be removed.
(d) Damaged and malformed poles will be cut back.

3.16.1.3: WEEDING: - Weeding will be carried out in the plantation in order to boost the growth of natural and planted seedlings as per the model sanctioned by the competent authority.

SECTION:3.17: OTHER REGULATIONS:

3.17.1.1:GRAZING :- Coupes will remain closed to grazing for a period of five years from the year of main planting. While taking up plantations in the under stocked areas palatable fodder grasses suitable for the area will be sown or planted by tussocks so that at the end of five years when the coupe will be opened for grazing, the villagers would have enough fodder for their cattle on rotational harvest basis from such coupes.

3.17.1.2: FIRE CONTROL : The areas shall be protected from fire religiously. Annual fire fighting schemes shall be implemented on participatory basis in order to protect the areas from annual fires.

3.17.1.3: PARTICIPATION: The local people shall be made aware of the importance of protection to the forests from fire, illicit grazing, illicit cutting and encroachment. Participation of local people shall be encouraged in protection and afforestation of forests. For this purpose, regular awareness campaign shall be arranged to explain the people about the importance and benefit of regeneration and protection of forests. Village Forest Protection Committees shall be formed and a comprehensive forest protection scheme shall be prepared and implemented through active participation of local people through JFM. The active participation will be as per the guidelines given Chapter VIII under JFM WC in this plan.

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CHAPTER – IV

WORKING PLAN FOR THE TEAK PLANTATION WORKING CIRCLE

SECTION: 4.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:-

4.1.1.1: *Teak* is most widely planted species, mainly due to its ever increasing economic value. The species is very versatile in its presence, starting from Western Aravallis to East of Mahanadi and in practically all along the Indian Peninsula and occasionally pure in composition, mainly due to pre-climax attained due to edaphic or biotic conditions. It finds easy to establish in many adverse conditions, though the growth is lesser. It thrives best in well drained sandy loam soil and clayey loam soil, with high exchangeable Calcium ions (Ca^{++}) and good aeration and low Carbon/Nitrogen (C/N) ratio preferably less than 20. It fails miserably in clayey soils and fairs badly in Laterite soils. Due to its long growing period varying from June to November, it thrives well in the soil with high water holding capacity. The nursery technique and art and science of raising *teak* plantation has been standardized and practiced successfully since almost over a century. This Chapter provides for raising of *teak* as a valuable species in suitable area.

4.1.1.2: *Teak* Plantation Working Circle comprises of the areas fit for overwood removal with artificial regeneration of such areas with *teak* and the old *teak* plantation areas which were successfully regenerated with *teak* during previous plans period. This working circle is, therefore, dealt in two parts: namely (1) *Teak* Plantation with Overwood Removal and (2) Old *Teak* Plantations.

4.1.1.3: *TEAK* PLANTATION WITH OVERWOOD REMOVAL: - Forest areas of Sironcha Forests are of very high productivity. To harness the optimal output from the tract it becomes duty of foresters to introduce such management which will fetch the desired result. The demand for high quality timber in future is bound to increase and for meeting the demand suitable species must be taken up for plantation and development in suitable areas. In this perspective, removal of old and over matured overwood with regeneration of those areas with improved *teak* plantation is hereby prescribed. The areas which have matured or over matured *teak* or miscellaneous forests capable of producing very good *teak* plantations are kept under this working circle. The criteria for overwood removal of artificial regeneration from, with a superior stock of teak is fixed as follows- (i) Area with good drainage (ii) Area with matured and over matured crop (iii) Area suitable for teak plantation (iv) Area with deficient natural regeneration and (v) Area with All India Site Quality I, II and III leaving Site Quality IV as not suitable for teak plantation. The area under *teak* plantation working circle taken together is 5% of the total forest area of tract. The range wise distribution of the areas allotted to this working circle is given in the following table no 92.

Table No-92

TABLE SHOWING THE AREAS UNDER OVERWOOD REMOVAL AND OLD TEAK PLANTATION IN TEAK PLANTATION WORKING CIRCLE

Sr №	**Range**	**Range area (ha)**	***TEAK* PLANTATION WORKING CIRCLE (ha)**			**% wrt TPWC**
			***Teak* Plantation**	**Old *Teak* Plantation**	**Total**	
1	Asarali	23,973.768	846.807	144.600	991.407	10%

2	Dechali	24,070.506	625.258	1,578.372	2,203.630	22%
3	Jimalgatta	21,629.981	633.420	426.700	1,060.120	10%
4	Kamalapur	49,083.667	368.145	1,460.680	1,828.825	18%
5	Pranhita	35,396.830	751.680	1,228.600	1,980.280	19%
6	Sironcha	58,343.807	728.300	1,397.000	2,125.300	21%
Sironcha Division		212,498.579	3,953.610	6,235.952	10,189.562	5% wrt Dn

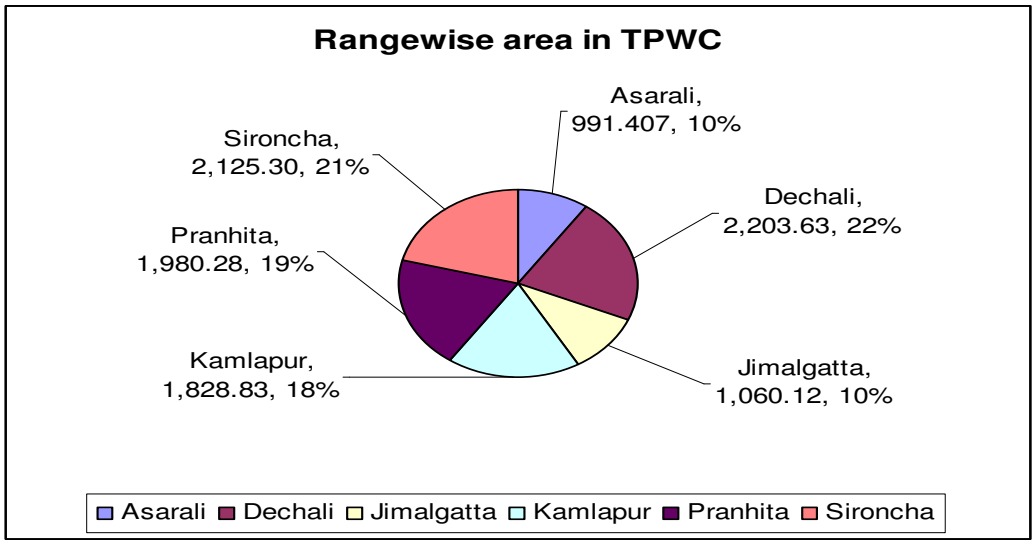
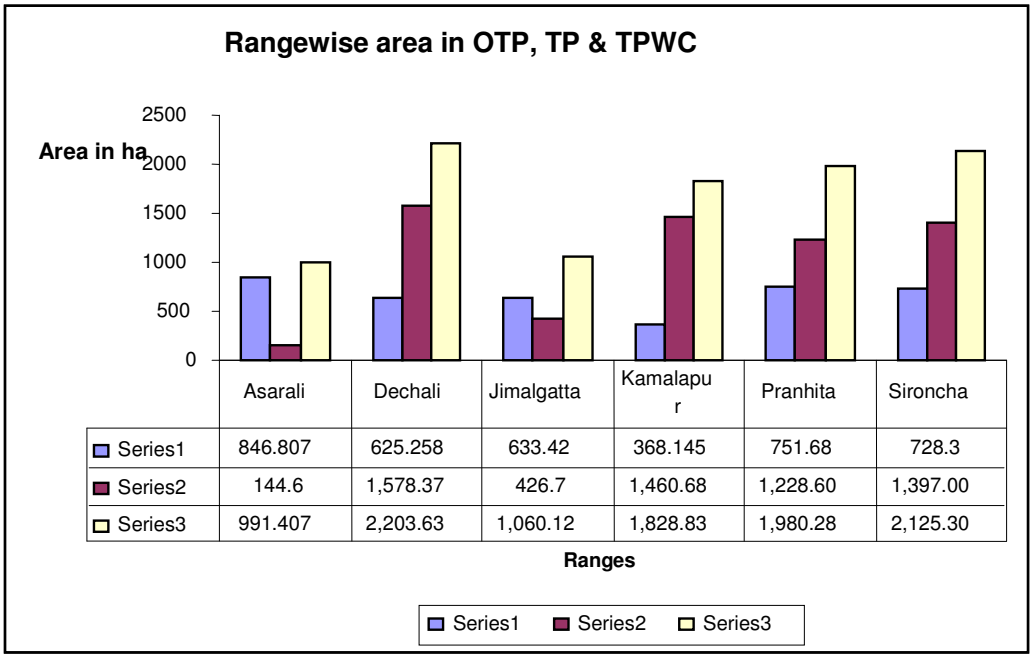


TABLE NO -93
CHARTS SHOWING RANGE WISE AREA DISTRIBUTION IN TEAK PLANTATION WORKING CIRCLE



On perusal of above table it is obvious that the area under overwood removal and plantation with *teak* is 2 % of total forest areas of the Forest Division and after adding to it the Old *Teak* Plantations total is 5%. Overall ecological balances would not be disturbed if *teak* plantations are raised in such smaller areas to meet the increasing need of valuable *teak* timber.

SECTION: 4.2: GENERAL CHARACTER OF THE VEGETATION:

4.2.1.1: The general description of the forest is given in Chapter II Part I of this plan report. The forest included in this working circle is mostly of *teak* and its associate's miscellaneous species such as *ain, dhaoda, bija, aonla, tiwas moha, lendia, garari* etc. Bamboo is also found in these areas in sufficient or meager quantity. The All India *Teak* Site Quality of the areas is II and III with patches of I and IV. The crop density is more than 0.5 upto 0.9. The natural regeneration of *teak* and other miscellaneous species is scanty in the compartments selected for *teak* plantation. The crop is matured to over matured. *Teak* is the principal species and appears at its best in gently sloping, deep and well drained soils.

SECTION: 4.3. SPECIAL OBJECTS OF MANAGEMENT

4.3.1.1: The special objects of management are:
(1) To manage the forest as high forest under intensive working with the object of producing large sized and plywood quality timber.
(2) To convert the low quality *teak*, miscellaneous forests and uneven aged crop containing large proportion of inferior species into high quality *teak* forests.
(3) To increase the stocking of *teak* in potential areas, and
(4) To meet the local and commercial demand with progressive increase in productivity of valuable teak timber.

SECTION: 4.4: FORMATION OF WORKING SERIES:-

4.4.1.1: The compartments allotted to this working circle have been given in this plan in volume II, Appendix № XIX. Thus eleven working series each with ten coupes has been constituted.

SECTION: 4.5: WORKING CYCLE:-

4.5.1.1: Period of the plan is of 10 years. Hence, overwood removal will be done in this area in 10 years. The number of coupes per working series is 10 and each coupe is annual as per the sequence given in the Appendix № XIX.

SECTION: 4. 6: AGENCY OF EXPLOITATION:

4.6.1.1: Demarcation and marking will be done departmentally. Overwood removal will be done as per the Government policy, preferably departmentally. But regeneration and subsidiary operations shall be done departmentally.

SECTION: 4.7: ANALYSIS AND VALUATION OF CROP:

4.7.1.1: The analysis and valuation of the crop has been assessed as under:
(1) Stock map: Stock mapping has been carried out and the result of that is given below in Table No-94.

Table No-94
TABLE SHOWING THE RESULT OF STOCKMAPPING OF THE AREAS

Type of area	Extent of area in ha
TI	0.000
TII	406.446
TIII	135.315
TIV	0.000
MI	0.000
MII	2354.862
MIII	359.750
MIV	406.265
Cultivation	145.878
Blank	82.189
Total	3,953.610

Where:
T stands for teak and M for miscellaneous. TI stands for teak site quality I and so on.
(2) Site Quality: The site quality of the working circle is II to III
(3)Tree enumeration: 1% sampling tree enumeration has been done by the Survey of Forest Resources Unit (SOFR) under Working Plan Chandrapur- 2 during 2002-03. The result of that has been given below in Table No-95

Table N0-95
TABLE SHOWING THE RESULT OF ENUMERATION

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Girth class in cm	No of trees/ha
15-30	88
31-45	91
46-60	68
61-75	53
76-90	37
91-105	26
106-120	18
121-135	12
135-150	11
>150	2
Total	405

(4) Analysis: The results of analysis of tree enumeration have been given above.
SECTION: 4.8 SILVICULTURAL SYSTEMS:
4.8.1.1: Consistent with the objects of the management of this working circle the silvicultural system prescribed for this working circle is Removal of Canopy (Overwood Removal) system followed by artificial regeneration of genetically superior stock of *teak*. However the advantage of advance growth of *teak* below 60 cm in girth at breast height occurring in patches of not less than 0.5 hectares in extent will be taken and such patches would be kept as part of future crop after appropriate cleaning and thinning.

SECTION: 4.9: CHOICE OF THE SPECIES:-

4.9.1.1: The *teak* will be the principal species to be planted at a spacing of 2 m X 2 m. The standard nursery and planting techniques for raising *teak* will be adopted. Every year

about 400 hectares of area will be tackled and leaving site quality IV areas, plantation and cultivation area, approximately in 300 ha area comes under overwood removal and leaving boundary and strips for section lines approximately in 250 ha overwood removal will be done and planting of *teak* will follow. Method of overwood removal and planting of *teak* is given in subsequent paragraphs of this chapter.

SECTION: 4.10: REGULATION OF YIELD:

4.10.1.1: Yield shall be regulated at the basis of area. Efforts have been made to keep the annual coupe areas uniform. However some variations may be due to variations in terrain and undulation.

SECTION: 4.11: DEMARCATION OF COUPES, PREPARATION OF TREATMENT MAPS AND MARKING TECHNIQUES

4.11.1.1. **DEMARCATION.** Except 1st coupe due for working, rest of the coupes will be demarcated one year in advance of the main felling as given in sequence for working in volume II. 1st coupe due for working will be demarcated, marking of trees will be carried out and felling will be executed during first year of operation of this plan to streamline the working of annual coupe. Demarcation and marking will be carried out as per the prescription given Chapter XII for Other Important Regulations.

4.11.1.2. PREPARATION OF TREATMENT MAP. After demarcation of the coupe, treatment map will be prepared by the Range Forest Officer and duly supervised by Assistant Conservator of Forests and inspected by Deputy Conservator of Forests In Charge of the Division. The treatment map will show the following type of areas.

4.11.1.3. TYPE A - PROTECTION AREA. Protection Area which includes the steep slopes above 25º (degrees), areas likely to erode and a strip of 20 m around water course as buffer area. It includes the following area.

(i) Areas with steep slopes more than 25°.
(ii) Areas eroded or liable for erosion.
(iii) 20 meter wide strip on either side of banks of the water course.
(iv) Riparian Zones .
(v) Sacred Groves .

4.11.1.4.TYPE–B . UNDER STOCKED AREAS. It includes the areas with crop density less than 0.4 but exceeding 0.5 ha in extent at one place .

4**.11.1..5.TYPE-C . (a) GROUP OF YOUNG POLES** . It includes patches of well grown pole crop of *teak* and other miscellaneous species suitable for retention as a future crop in addition to old plantations. The patch will not be less than half hectare. These patches will be spaced out for healthy growth.

(**b) TEAK PLANTATION**. Teak plantation taken during previous plan period will be included in this category and treatment will be as per the prescription for old teak plantation i.e. thinning will be done in the year as per sequence for that given for old teak plantation in Teak Plantation Working Circle.

4**.11.1.6.TYPE – D- WELL STOCKED AREAS** . Areas with crown density above 0.4 will be included in this category .

4.11.2.TREATMENT .

4.11.2.1. Following types of treatment will be given to areas as classified above. If necessary, nala bunding and gully plugging shall be done over the complete area of the

coupe as per treatment map and duly sanctioned by competent authority. The area wise treatments proposed are as follows .

Type A - Protection Area . Felling is not prescribed.

Type B – Under stocked Area . Overwood removal will be carried out. *Teak* and suitable miscellaneous species shall be planted.

Type C – Pole Crop or advanced growth . No planting will be done. Thinning will be done in the young pole crop to create interval between remaining trees to 1/3 of the average height as a thumb rule. *Teak* plantation areas shall be treated as per prescriptions provided for old teak plantations in *teak* plantations working circle of this plan.

Type D - Well Stocked Areas : Overwood removal will be carried out as provided under Marking Rules followed by artificial regeneration by teak and suitable species in subsequent year.

4.11.3.MARKING RULES AND MARKING TECHNIQUES

4.11.3.1. Marking Rules: Marking will be done in the same year in which demarcation will be done. Before actual marking, sample plots of size 60m X 60 m with intensity 5 to 10 % in each section of coupe will be taken. Sample plots should not be at the edge of the coupe. The distance between the centers of two sample plots should not be less than 200 m. In sample plots complete enumeration of trees of each girth class will be done and the data will be compiled to determine the number of trees available for marking for felling.

4.11.3.2. Then the site quality will be determined. In the same coupe, if a patch of more than 5 ha is having different quality, the enumeration data should be collected separately. The abstract of enumeration data will be prepared site quality wise. Then the no of stems to be removed for overwood removal is determined on the basis of groups of different species. **4.11.3.3**. Marking technique has been described in detail in chapter XII under the head `Other Important Regulations:

4.11.3.4. The marking rules for each type of area is prescribed as follows-

(i) TYPE – A- PROTECTION AREAS . No marking shall be done as felling is not prescribed. Dead trees will be removed. The root suckers will be encouraged. Bush sowing of suitable species will be carried out by the beat guards/van majoors.

(ii) TYPE – B- UNDERSTOCKED AREAS. Marking will not be carried out except-

All the dead trees.

All live high stumps to be cut as close to the ground as possible and dressed.

All coppice shoots of valuable species except one or two vigorously growing shoots per stool. Valuable species includes *teak*, *ain, bija, dhaoda, mowai* etc. Malformed stumps and seedlings will be cut back, flush to the ground.

(iii)TYPE –C – (a) POLE CROP . (a) **Natural pole crop** of not less than 0.5 hectares shall be spaced out in such a way that an average spacing of 1/3 of height of poles shall be maintained between two rows. The healthy poles will be preferred for retention.

(b) Successful plantations crop will be thinned as per thinning schedule given under teak plantation working circle.

(iv) TYPE – D- WELL STOCKED AREA. In well stocked area overwood removal will be carried out and subsequently teak will be planted in following year. Following method will be executed for overwood removal.

(a) Coupe due for working will be divided into suitable sections. The average size of a section will be about 15 hectares. No section will be of less than 10 hectares or more than 20 hectares. The section so formed will be convenient from all aspects specially for transport. Full use of existing roads, nala, and cart tracts will be made use of as far as possible in forming sections.

(b) A strip of existing forests of minimum 20 meters width will be demarcated giving one band with red paint on both edge of the strip separating two sections called section lines. All trees so marked should be visible from one another
(c) Demarcation of section line for area about 15 ha. Each section will be of area not less than 10 ha and not more than 20 ha.
(d) While laying and demarcating section lines, as above, wherever possible, groups of young pole crop of seed origin of *teak*, *semal, khair*, *rose wood* and other superior miscellaneous species shall be included in section lines to avoid its sacrifice while removing the overwood. If required, width of section lines may suitably be increased for the purpose.
(e) After demarcation, the whole area of the coupe shall be thoroughly inspected by the Assistant Conservator of Forests/Deputy Conservator of Forests in charge to ensure that the section line is as per the prescriptions.

SECTION :4.12 METHOD OF EXECUTING THE OVERWOOD REMOVAL

4.12.1: Area Selection: Area suitable for overwood removal will be decided as follows:
(i) Area with good drainage,,
(ii) Area with matured and over matured crop,
(iii) Area suitable for teak plantation,
(iv) Area with deficient natural regeneration,
(v) Area with All India Site Quality I, II and III leaving Site Quality IV as not suitable for teak plantation.

4.12.1.1: In section shown on the treatment map found suitable for *teak* plantation, marking for felling the entire crop shall be done and following trees shall not be marked for felling and reserved for retention.
(a) All young to middle aged fruit bearing trees upto 20 trees per hectare. If fruit trees are not available, the required number shall be completed from miscellaneous trees. For the purpose of retention, priority shall be given to established fruit trees preferably in 30 cms to 90 cms girth class. The trees so retained should be, as far as possible, uniformly spread over the area.
(b) Young to middle aged trees of *semal, khair, rose wood* and other superior miscellaneous species upto 40 trees/ha uniformly spread over the area. For the purpose of retention, priority shall be given to established trees preferably in 30 cms to 60 cms girth class.
(c) All *kulu, moha, chinch and mango* trees irrespective of age.
4.12.1.2: In addition, no marking for felling shall be done in all areas of coupe-line and section lines , and in 20 m wide strips on the side of water course or well defined nalas. However at other places, improvement felling including removal of dead and hollow trees, and those which are likely to fall shall be done. Crooked and unsound advance growth of *teak* shall be cut back.
4.12.1.3: No marking for felling shall be done in areas that are unfit for *teak* plantations. If the area is otherwise suitable for planting, the blanks shall be planted with *arjun, ain* and other suitable species.
4.12.1.4: In the balance area of the section having forest which are unsuitable for *teak* plantations shall be given the treatment as per site requirement. In addition to this, badly grown and unsound trees shall be marked for felling and the reproduction of intolerant species like *teak*, bija, shisham, semal and other superior miscellaneous species shall be freed from the shade of bamboo and other inferior trees. All climbers shall be cut.

4.12.1.5: Marking of trees suitable for felling will be carried out as per the marking rules given in the Part II, Chapter XII of this plan. Marking will be done under the close supervision of the Range Forest Officer and will be verified by an Officer of the rank of Assistant Conservator of Forests and inspected by Dy C.F.

4.12.1.6: In area not suitable for overwood removal, selection fellings will be carried out as prescribed in Chapter II for Selection Working Circle.

SECTION:4. 13: SOIL AND MOISTURE CONSERVATION WORKS

4.13.1.1: Soil and moisture conservation works will be carried out after the preparation of treatment map and approved by the Deputy Conservator of Forests. The model of soil and moisture conservation works will be as per approved model by the competent authority. Efforts should be in a direction that leads in enhancing the vegetal cover and retarding the soil run off and retention of moisture regime to the tract. Works shall be completed before the onset of Monsoon. Quantum of work will depend upon the site requirement.

SECTION : 4.14: SUBSIDIARY CULTURAL OPERATIONS:

These operations shall be carried out departmentally and shall include:

4.14.1.1: Cutting Back Operations (CBO):- These operations will be carried out departmentally in the year following the year of main felling as per the sequence given in the Appendix № XIX. These operations consist of the following works:-

(i) Climber cutting over whole area of the coupe.
(ii) Felling of all badly damaged or broken trees.
(iii) Cutting back of malformed advance growth of *teak*.
(iv) Cutting back of valuable growth damaged during the felling.
(v) Freeing young growth of *teak* and other valuable species from interference of bamboos and other inferior species.
(vi) All stools will be cleared of felling debris.
(vii) In eroded areas and areas liable to erosion, gullies and small nalas will be plugged with nearby debris or stones to check washing away of the soil and deepening and widening of the gullies and nalas

4.14.1.2: Cleaning:- Cleaning will be carried out departmentally in the 5^{th} year as per the sequence given in the Appendix № XIX. These operations consist of the following works:-:

(i) All climbers will be cut over the whole area of the coupe.
(ii) Damaged and malformed samplings and coppices shoots will be cut back.
(iii) In teak plantation area coppice shoots will be totally cut and removed except where planted stock has not come out successfully. In that case, multiple coppice shoots will be reduced to one per stool. Shoots to be retained should be most vigorous, well grown and well spaced. Side shoots will be retained. Persistent side branches will be cut 15 cm away from the plant without damaging the stem.
(iv) Fast growing inferior species and bamboo interfering or likely to interfere with the reproduction of *teak* and other valuable species will be cut.
(v) In thick patches of advance growth of *teak* and established regeneration of other valuable species, spacing between saplings to be retained, should vary from 2 meter to 2.5 meter depending on the height growth.

(vi) In plantations of *teak*, weed growth may be cleared within a radius of 1 meter from each surviving plant and intensive soil mulching carried out immediately after the rainy season is over.

(vii) Cleaning in plantation areas should be carried out as and when required upto 1st thinning. It consists of cutting multiple leaders and weeding.

4.14.1.3: Thinning:- Thinning is to done as per prescription given in the technique for teak plantations.

SECTION 4.15: SUCCESSFUL *TEAK* PLANTATIONS

4.15.1.1: The successful *teak* plantation taken up in the previous working plans periods as per the prescriptions contained in them and the *teak* plantations to be taken during the execution of this plan have been included in this section. Areas of successful *teak* plantations are not in consolidated patches, but are in scattered patches spread in many compartments.

4.15.2.: GENERAL CHARACTER OF THE VEGETATION

4.15.2.1: *Teak* plantations taken during previous plan periods may be considered as successful *teak* plantations as far as the number of *teak* stems/ha conforming to stand table in these plantations are concerned. But due to non adherence to the prescriptions for thinning and cleaning in the past to these plantations, the overall health of the stand does not conform to the expected rate of growth in terms of height, girth and volume, and above all, the form of the stem. It needs immediate intervention by management to have timely operation of thinning and giving adequate scope for growth as per the objectives of such plantations. The site quality of these plantations varies from II to III. Some plantations are showing the admixture of miscellaneous species due to natural dispersal and reproduction of other species.

4.15.3: BLOCKS AND COMPARTMENTS

4.15.3.1: The range wise details of compartments and their areas covered under old *teak* plantations have been given in volume II, Appendix № XIX.

4.15.4. SPECIAL OBJECTS OF MANAGEMENT

4.15.4.1: The main objectives of *teak* plantation were to have the *teak* crop with growth parameters comparable to those in the stand table for *teak* plantation and thus producing maximum growth in volume and value of the stand. Due to none compliance to the prescriptions in the past the objectives have been not achieved Therefore, to achieve the goal of the plantations to the greatest extent, the objectives of management are as follows:

(1) To carry out thinning as per the stand table on the basis of age and site quality and present crop.

(2) To improve the crop by carrying out required silvicultural operations so as to achieve growth parameters comparable to those in the stand table for *teak* plantations.

4.15.5: ANALYSIS AND VALUATION OF THE CROP

4.15.5.1: STOCK MAPS:-All old *teak* plantations have been shown on stock map in scale of 1:15,000.

4.15.5.2:DENSITY: Generally crop is fully stocked.

4.15.5.3:ENUMERATION: Sampling enumeration shall be done by the territorial division to assess the extent of removal for thinning during the period prescribed for thinning in sequence for thinning given in volume II, Appendix № XIX.

4.15.5.4:AGE AND QUALITY: Successful Plantation raised right from 1950 to 2000 has been included. The site quality varies from II to III. The plantations earlier to 1950 have been assumed to merge with natural forest.

4.15.6: TREATMENT MAP:

4.15.6.1:- The entire plantation area of the coupe due for thinning will be visited by Range Forest Officer. He will prepare a grid map of 100m x 100m. Grid wise enumeration of stems of both *teak* of seed origin and coppice origin and other species will be carried out. Treatment map, classifying the total area in following three categories will be prepared by Range Forest Officer and duly verified by Assistant Conservator of Forests and inspected by Deputy Conservator of Forests.

(1) **Type I**: It shall include fully stocked areas i.e. successful plantations.
(2) **Type II**: It shall include patches where plantation is failure.
(3) **Type III:** It will include area which is partially successful partial failure i.e. the areas having *teak* stems not conforming to stand table i.e. less than that.

4.15.7:SILVICULTURAL OPERATIONS:

4.15.7.1: Silvicultural operations will be carried out as per the grid types classified in the treatment map prepared under paragraph 4.15.6.1.

4.15.7.2:Thinning in *teak* plantation: Thinning will be carried out in Type I and Type III areas as per the sequence given in volume II, Appendix № XIX.

4.15.7.3:Silvicultural Thinning in *Teak* Plantations :- First silvicultural thinning at the age of 10 years of the plantation will be carried out and after that at the interval of 5 years.

4.15.7.4:-Demarcation, preparation of treatment map and cleaning :- The thinning area should be properly demarcated , treatment map prepared as per 4.15.6.1. and cleaning will be carried out. *Teak* is highly susceptible to root competition and hence it is essential that the thinning area is cleansed of all unwanted root competition The removal will also allow the productive capacity of soil, distributed in few promising and potential stems rather than distributed in many unpromising stems. The plantation at that stage contains lot of bushes and weeds and these are invariably required to be removed, and therefore, a cleaning of these plantations will be required and rate of such cleaning will be fixed by Conservator of Forests (Territorial). The cleaning of plantation should include the removal of –

(a) Bushy weeds.
(b) *Garari*, *lendia* or any other pioneering species. Amaltas will not be removed as this is the natural biological parasites of *teak*-defoliators and *teak*-skeletonizer.
(c) Damaged or badly shaped poles/trees will be flushed to the ground.
(d) Climber cutting:- The climber will be cut at two places, The cleaning will be done only in the areas of the plantation, under thinning, as these are usually devoid of under

growth, mainly due to closed canopy and often due to unestablished allelopathic effect where it is required The cleaning may not be required in older plantations.

4.15.7.5:-Procedure for Silvicultural thinning :-First Silvicultural thinning of thinning regime B-grade will be carried out . Each grid will be enumerated .First of all the age of stand will be ascertained with the available data of plantation or carrying stem analysis of few stems. Grid wise enumeration of stems shall be carried out**.** Data will be prepared in the following table-

Compartment/Survey Number- ---, Year of Plantation- ----
Beat --- Round ---- Range---

SrNo	GBHOB)	Species		Origin	Status	Remarks
		Teak	NonTeak	Seed/Coppice	D/C/S/M	
1	45	Teak		Seed	D	To be retained
2	51		Ain	Seed	D	To be felled
3	36	Teak		Coppice	S	To be felled
.						

Where:

GBH(OB) – girth at breast height over bark.
D - Dominant.
C - Codominant.
S - Suppressed.
M - Malformed.
I - Intermediate

Grid wise average girth will be computed and accordingly basal area will be computed. Basal area may be directly taken with the help of Wedge Prism point sampling. At least at three places Basal area with the help of Wedge Prism will be taken and average calculated. After working out average girth and Basal Area the data will be compared to with that of stand table. If the basal area of crop is more than that in stand table for corresponding age then thinning will be carried out as following manner. First of all, all non teak species will be marked for felling except fruit bearing species. After marking of non teak species, teak trees of coppice origin will be marked for felling. After that malformed, suppressed, intermediate codominant and then dominant teak will be marked for felling in respective order upto the number of marked trees for felling are available leaving behind retained number of trees conforming to stand table data of number, crop girth and basal area uniformly spread. After marking of trees to be felled, point sampling with the help of Wedge Prism will be taken to have the basal area of stand leaving the marked trees from tally count. If the basal area is matching to that of stand table then the marking is perfect. If not then deletion of trees marked for felling or addition of another trees to be marked for felling will be done as per requirement. In case of old plantations, in which thinning had not been carried out and crop is congested, direct stand table will not be applied. Instead of that the average girth of the stand will be worked out. On the basis of average girth the corresponding age nearest to multiple of 5 m higher side will be read from stand table. Then the thinning will be carried out as if the crop is of that age. Care should be taken that over thinning will not be carried out.

4.14.7.5: Thinning Cycle:-

1st thinning	10th year
2nd thinning	15th year

3rd thinning	20th year
4th thinning	25th year
5th thinning	30th year
6th thinning	35th year
7th thinning	40th year
8th thinning	45th year
9th thinning	50th year
10th thinning	55th year
11th thinning	60th year

Between 10-60 years at the interval of 5 years. Last thinning should be at the 60 years, after that the crop should be left to nature to grow.

4.14.7.6:- AGENCY FOR EXECUTION: All the operation will be carried out exclusively by the department under the strict supervision of the Deputy Conservator of Forest and Conservator of Forests.

SECTION:4.15: OTHER REGULATIONS:

4.15.1.1: FIRE PROTECTION : Plantation will be rigidly protected from fire. All measures will be taken to ensure the strict fire protection of the *teak* plantation areas as given Forest Protection Working Circle.

4.15.1.2: GRAZING: The local people will be persuaded to graze their cattle in areas other than closed areas. For cooperation 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 the local villagers should be continued to have better understanding with them. However, the old *teak* plantations areas need not be closed for grazing unless the areas are threatened of trampling of soil . Measures to be taken under grazing control as given in Forest Protection Working Circle.

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CHAPTER-V

WORKING PLAN FOR PROTECTION WORKING CIRCLE

SECTION – 5.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE

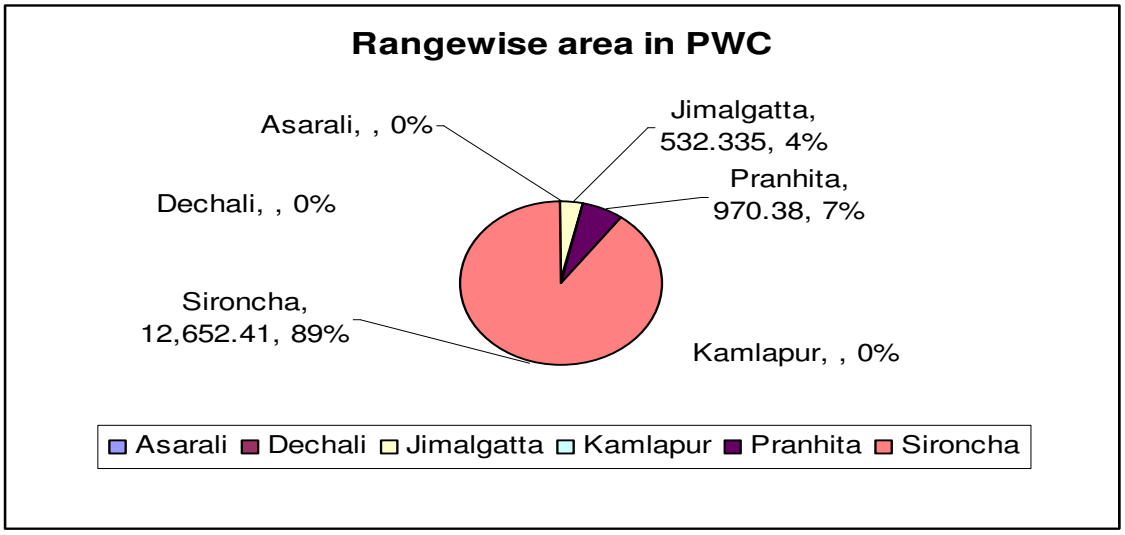
5.1.1.1: This working circle includes the hilly and undulating areas having slopes over and above 25º. These areas are situated in Enkabanda, Karancha and Deolmari hill ranges of Jimalgatta and Pranhita ranges and hilly terrain situated to the north of Rompalli, Jhinganoor and denuded areas around Nandigaon, Chitur villages of Sironcha range. These areas also contain such areas which slope is less than 25º but forms the part of compartment. Some flat plateau with dense forest or bamboo is found there. The steep and precipitous areas elsewhere which are inextricably mixed with compact blocks of forest of plain or gently sloping configuration have not been included here. These areas have been allotted to other respective working circles.

5.1.1.2: The range wise distribution of the area under this working circle is given in the following table:

Table No-95

TABLE SHOWING THE RANGE WISE AREA IN PWC

SrNo	Range	Area of Range	Area in PWC	% wrt range area
1	Asarali	23,973.768		0%
2	Dechali	24,070.506		0%
3	Jimalgatta	21,629.981	532.335	4%
4	Kamlapur	49,083.667		0%
5	Pranhita	35,396.830	970.38	7%
6	Sironcha	58,337.727	12,652.41	89%
	Division	212,492.479	14,152.120	6.6%wrt division



SECTION: 5.2: SPECIAL OBJECTS OF MANAGEMENT

5.2.1.1: The special objects of management in constituting this working circle are:

(1) To maintain and improve the adequate vegetation cover on the steep and precipitous hill slopes as a safe-guard against soil erosion and rapid run off of water.
(2) To give rest to these forests from exploitation activities.
(3) To promote and maintain a permanent vegetation cover.
(4) To preserve the available rich genetic biodiversity in the natural forests.

SECTION: 5. 3: GENERAL CHARACTER OF THE VEGETATION:

5.3.1.1. The general descriptions of the forest allotted to this working circle have been given in detail in chapter I Part II of this plan. The forests mainly are of mixed type. Teak is present in a lesser percentage. The quality of the crop is III to IV mainly due to shallow soil and drier conditions. The main species are *salai, mowai, kusum, bija, teak, kalamb, anjan, dhaoda, ain, bhirra etc.* Density varies from 0.4 to 0.8. Under stocked patches are common. The good crops are in depression and in southern aspect where there are mesic sites. The areas near to habitation have been severally affected. The growth of the crop is stunted and malformed in patches but very good elsewhere. The soil is shallow and bouldery. In the under stocked areas *anjanwak* trees are common with under storey of *dikamali, ranmehandi, rohan, alicheetu, triumpetha and kusalgrass.* The areas are prone to soil erosion and loss of vegetation cover. The overwood consists of *ain, dhaoda, salai mowai, kulu, tendu, achar, semal, bija, tinsa, bhirra, anjanwak, rohan*, etc. The forest is usually mixed deciduous type.

SECTION: 5. 4: ANALYSIS AND VALUATION OF THE CROP:

5.4.1.1: The enumeration of growing stock has been carried out by SOFR unit under Deputy Conservator of Forests Working Plan Chandrapur –2 during 2002-03 by 1% systematic sampling. The result has been given in appendix No. II in volume II of this draft plan report. The areas which were on very steep slope, where the laying down the sample plots for enumeration was difficult has been ignored for enumeration.

SECTION 5.5: METHOD OF TREATMENT:

5.5.1.1: The main objects of the management are to maintain and improve the adequate vegetation cover preserve the soil and to give rest to these forests from exploitation activities. Therefore, no working in these forests is prescribed in actual protection areas. But improvement felling as given in chapter III in part II of plan in the areas which are suitable for it. Essential silvicultural operations like climber cutting and removal of dead, dying and malformed trees in such areas will be carried put. Bamboos form an under storey and its removal will generally not disturb the protective functions and hence bamboo exploitation as per the silvicultural prescriptions under Bamboo (Overlapping) Working Circle will be done. No specific system of management is prescribed nor is any one required under the present objects of management. However collection of minor forest produce like *mahua* flower and fruit, *char, bel, tendu*, *gum*, etc may be permitted to the local tribes / villagers for their bonafide use and under joint forest management, value added programmes for minor forest produces may be under taken.

5.5.1.2: The forests under this working circle need special treatment in the form of soil and moisture conservation works. Since the slope is steep, no earth work is stipulated. To check the soil erosion and enhancing the moisture regime, vegetal cover of the tract will be increased. Dibbling of seeds of suitable species in under stocked and blank areas should

be done on regular basis through the concerned Beat Forest Guards and their results should be evaluated periodically. Bush sowing should also be encouraged. Bush sowing of neem and maharukh has been found to give better results.

5.5.1.3: The road repair works in the areas under this working circle should be taken up very carefully. Before the onset of monsoon cross drains should be put up on the roads. For repair of the roads, murrum should be brought from outside. No digging of borrow pits should be allowed in the area.

SECTION: 5.6: FORMATION OF WORKING SERIES AND FELLING CYCLE:

5.6.1.1: The whole area allotted to this working circle has been divided into 8 working series each containing 5 to 10 coupes at 10 years working cycle. Area of one or two compartments normally corresponds to a coupe. A statement showing the allotment of compartments to the working series and their division into coupes has been given in the volume II, appendix no. XXI of this plan. Working Series formed is as follows in the tabular form:

Table No-95

5.6.1.2: PWC: WORKING SERIES:			
Range	**Sr №**	**Working Series**	**Area (ha)**
Pranhita	1	Deolmari PWC WS	529.335
Jimalgatta	2	Jimalgatta PWC WS	970.380
Sironcha	3	Sironcha_1 PWC WS	12652.376
	4	Sironcha_2 PWC WS	
	5	Sironcha_3 PWC WS	
	6	Sironcha_4 PWC WS	
	7	Sironcha_5 PWC WS	
	8	Sironcha_6 PWC WS	

SECTION: 5.7: REGULATION OF YIELD:

5.7.1.1: No yield is envisaged, except from bamboos, and from any other non wood forest produces in protection areas. But in improvement areas yield will be accounted for as given in improvement working circle of this draft plan report.

SECTION: 5. 8: AGENCY FOR EXECUTING THE TREATMENT:

5.8.1.1: Prescriptions given in this working circle will be executed departmentally.

SECTION: 5. 9: METHOD OF EXECUTING THE TREATMENT:

5.9.1.1: DEMARCATION: Except for 1st coupe in the sequence of working of this plan period, coupes will be demarcated one year in advance of the main felling as given in the chapter XII, under Other Important Regulations of this plan. But 1st coupe will be demarcated in the first year of operation and main felling work will be in the same year where as in other coupes it will be in following year.

5.9.1.2:PREPARATION OF TREATMENT MAP :- After demarcation of coupe is over, Range Forest Officer will inspect the area and will prepare a treatment map for the same and it shall be verified by the Assistant Conservator of Forests after thorough inspection of the area. The treatment map thus prepared will be submitted to Deputy Conservator of Forests in Charge of Division, who will after sample checking give sanction to it. The treatment maps will show the following areas:

5.9.1.3: TYPE – A: PROTECTION AREAS: - It will include following areas:
(a) The area having steep slopes i.e. more than 25º.
(b) Eroded areas or areas liable to erosion.
(c) 20 meter wide strip on either side of water courses.
(d) Riparian Zones.
(e) Sacred groves

5.9.1.4: TYPE – B: UNDERSTOCKED AREAS: - It will include the forests having less than 0.4 densities are included in this category.

5.9.1.5: TYPE – C: (a) GROUPS OF YOUNG POLES: - Silvicultural thinning shall be done as per stand table. The patches of not less than 1(one) hectare shall be identified having advance growth of any species and it shall be spaced out to one third of the top height, while retaining the vigorous and straight poles. The thinning shall be done in such a manner that epicormic branches do not come up.

(b) OLD TEAK PLANTATIONS: Silvicultural thinning will be done as per sequence and stand table.

5.9.1.6: TYPE – D: WELL STOCKED AREAS: - The areas having forests more than 0.4 densities are included in this category. No felling is proposed.

SECTION: 5.9: OTHER REGULATIONS:

5.9.1.1: GRAZING: - Coupes will remain closed to grazing for a period of five years from the year of main planting. While taking up plantations in the under stocked areas palatable fodder grasses suitable for the area will be sown by seed dispersal so that at the end of five years when the coupe will be opened for grazing the villagers will have enough fodder for the their cattle on rotational harvest basis from such coupes.
5.9.1.2: FIRE CONTROL: The areas shall be protected from fire religiously. Annual fire fighting schemes shall be implemented on participatory basis in order to protect the areas from annual fires.

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CHAPTER – VI

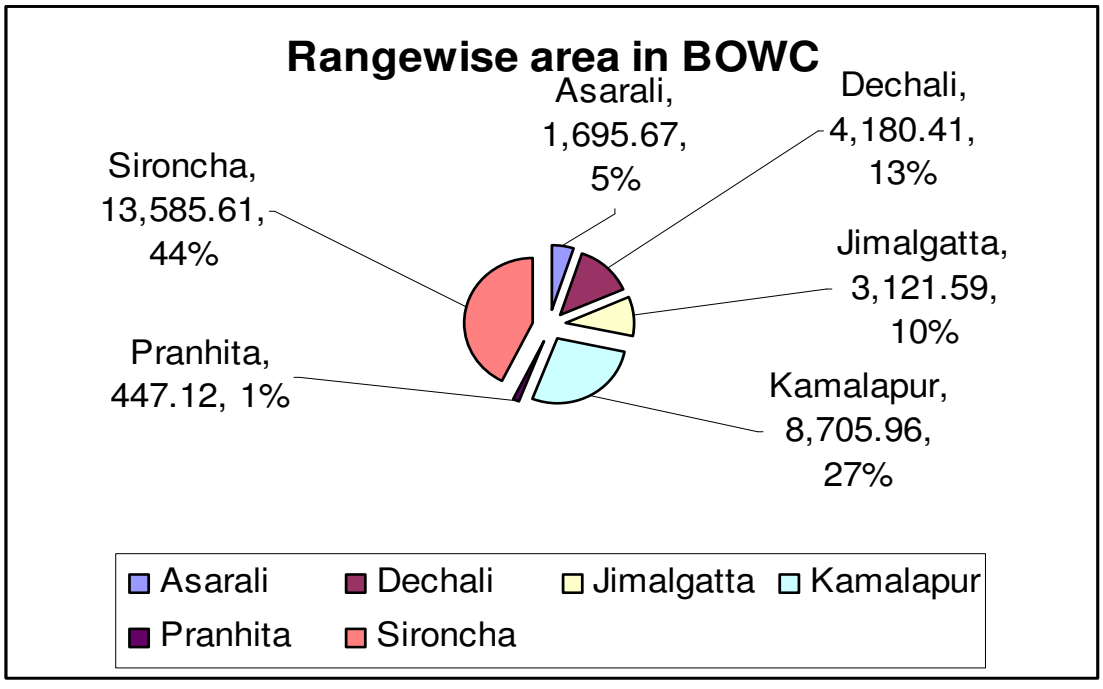
WORKING PLAN FOR BAMBOO (OVERLAPPING) WORKING CIRCLE

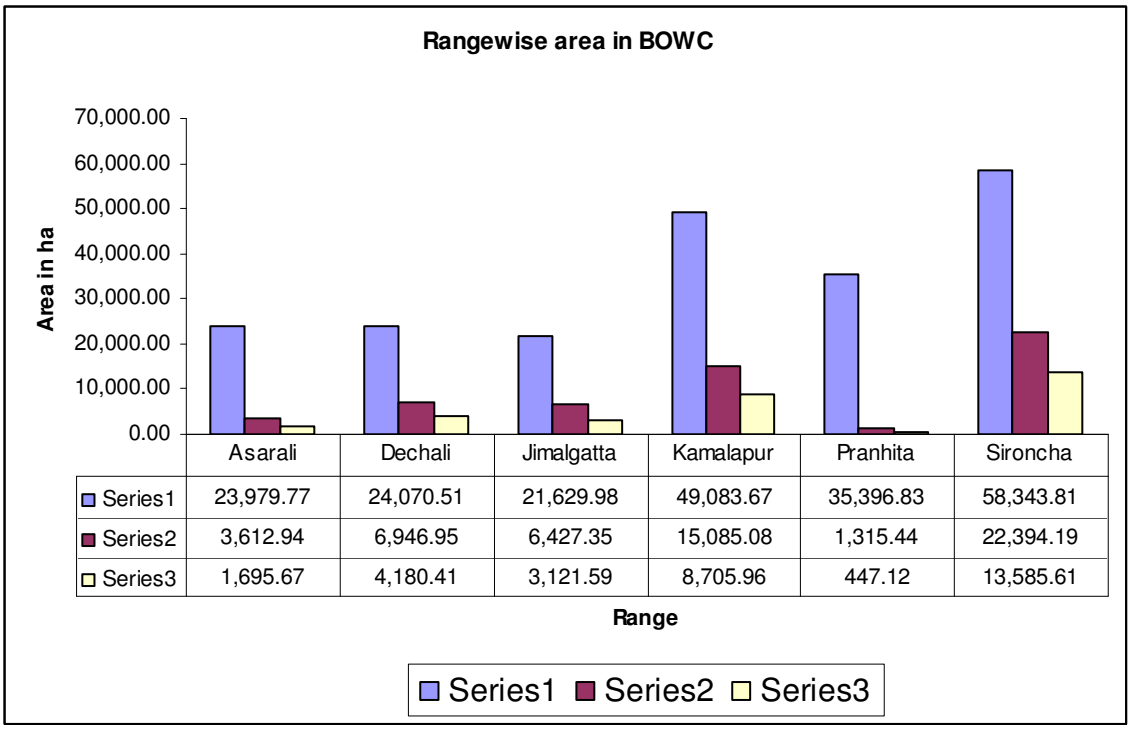
SECTION.6. 1. GENERAL CONSTITUTION OF THE WORKING CIRCLE

6.1.1.1. Bamboo (Overlapping) Working Circle includes all the bamboo bearing forests both natural and planted in areas of all other working circles. Minimum five living clumps per hectare in a compartment have been taken basis for allocation of that compartment to this working circle. Range wise area in hectare under bamboo overlapping circle is as follows.

Table No-98
TABLE ***SHOWING THE RANGE WISE AREA IN B (O) WC***

SrNo	Range	Range area (ha)	№ of Comptts included	Area in B(O)WC in ha		Remarks
				Compartment area	Bamboo area	
1	Asarali	23,979.768	17	3,612.937	1,695.666	26% of total working plan area contains bamboo of which 57% is under bamboo
2	Dechali	24,070.506	19	6,946.948	4,180.410	
3	Jimalgatta	21,629.981	20	6,427.347	3,121.590	
4	Kamalapur	49,083.667	48	15,085.075	8,705.960	
5	Pranhita	35,396.830	06	1,315.440	447.120	
6	Sironcha	58,343.807	94	2,2394.192	13,585.605	
Sironcha Division		212,498.579	204	55,781.939	31,745.357	





	Asarali	Dechali	Jimalgatta	Kamalapur	Pranhita	Sironcha
Series1	23,979.77	24,070.51	21,629.98	49,083.67	35,396.83	58,343.81
Series2	3,612.94	6,946.95	6,427.35	15,085.08	1,315.44	22,394.19
Series3	1,695.67	4,180.41	3,121.59	8,705.96	447.12	13,585.61

SECTION .6. 2. GENERAL CHARACTER OF THE VEGETATION

6.2.1.1. The common variety of bamboo occurs in this tract is Karka (*Dendrocalamus strictus*). It forms under storey in the better quality of forests. Quality of bamboo varies with the drainage, soil and past treatment. Bamboos occupy mostly hilly slopes and moist, sheltered areas and nala banks. The bamboos present in the depression and in good moist soil are good in quality, while those growing in open area are of poor quality. *Katang* bamboo (*Bambusa arundinacea),* another species of bamboo occurs in few patches on the banks of nala in Jimalgatta, Dechali, Sironcha and Asarali Ranges. In the year 1984-85, in some areas of Sironcha and Asarali ranges, gregarious flowering of Karka bamboo occurred. It resulted into reduction in bamboo growing areas. Now the regenerated bamboo areas are almost established but congested due to non removal of bamboo from there regularly. In the year 1987 and 1988 gregarious flowering occurred in *Katang* bamboo resulting in the depletion of this bamboo due to non regeneration or slow establishment.

SECTION .6.3. LOCAL AND COMMERCIAL DEMAND.

6.3.1.1. Bamboos are used for making baskets, tattas, temporary walls and variety of other items by locals and burads and for making pulp and paper by paper mills. Apart from local consumption and Ballarpur Paper Mill consumption, Chandrapur, Nagpur, Yavatmal and Nashik are the main consuming centers for bamboo of the tract. Local Nav Durga Bamboo Craft at Gadchiroli has entered into agreement with Forest Department to harvest 10000 Air Dried Metric Tones (ADMT) Bamboo from the tract for ten years. Upto 2000-01 Ballarpur Paper Mill used to extract bamboo yearly but due to naxalite activities Paper Mill is not

coming forward to work these areas. Even private parties are not willing to extract bamboo from these areas due to fear of Naxalites.

6.3.1.2. Considering the local demand and extensive bamboo areas, the surplus of bamboo potential is available and hence with a view to utilize the maximum potential of the bamboo forests, the bamboo production areas have been divided into 12 Nistar Bamboo Felling Series (NBFS) and 5 Commercial Bamboo Felling Series (CBFS) in order to utilize the optimum potential of bamboo forests on silvicultural lines.

6.3.1.3. Earlier the constitution of nistar and commercial bamboo felling series was intended to meet the local demand at concessional or free basis and surplus bamboo used to supplied to meet the commercial need of Ballarpur Paper Mill at the rate decided by the Government from time to time.

6.3.1.4. Unless naxalite activities stop in the area it would not be possible to fully utilize bamboos available in this area least the establishment of small scale industries in the region.

SECTION. 6.4. BLOCKS AND COMPARTMENTS.

There are 17 felling series allotted to this overlapping working circle.

Table No-99

TABLE SHOWING BAMBOO FELLING SERIES

Sr №	Name of Felling Series	Types
1	Georgepetha CBFS	Commercial Bamboo Felling Series
2	Motakpalli CBFS	Commercial Bamboo Felling Series
3	Pranhita CBFS	Commercial Bamboo Felling Series
4	Repanpalli CBFS	Commercial Bamboo Felling Series
5	Yenlaya CBFS	Commercial Bamboo Felling Series
6	Bejurpalli NBFS	Nistar Bamboo Felling Series
7	Chitur I NBFS	Nistar Bamboo Felling Series
8	Chitur II NBFS	Nistar Bamboo Felling Series
9	Dechali NBFS	Nistar Bamboo Felling Series
10	Kamalapur NBFS (Dechali)	Nistar Bamboo Felling Series
11	Kamalapur NBFS (Kamalapur)	Nistar Bamboo Felling Series
12	Karamgudam NBFS	Nistar Bamboo Felling Series
13	Kolamarka NBFS	Nistar Bamboo Felling Series
14	Maralpur NBFS	Nistar Bamboo Felling Series
15	Parsewada NBFS	Nistar Bamboo Felling Series
16	Pattigaon NBFS	Nistar Bamboo Felling Series
17	Tonder NBFS	Nistar Bamboo Felling Series

Details of compartments allotted and sequence of felling in bamboo overlapping working circle have been given in appendix number XX, in volume II of this plan. 204 compartments contain bamboo.

SECTION .6. 5. SPECIAL OBJECTS OF MANAGEMENT.

6.5.1.1. Special objects of constituting this working circle are as follows:
(1) Harvesting of bamboo on scientific lines to obtain maximum sustained yield.
(2) To meet the local people demand for bamboo to the greatest extent.
(3) To meet the demand of crafts and artisans for bamboo in the tract.
(4) To meet the demand of industries based on the paper.

SECTION .6.6. ANALYSIS AND VALUATION OF THE CROP

6.6.1.1. SOFR unit at Chandrapur had conducted survey of forest resources along with bamboo during 2002-03. The results have been given in Appendix № II in Volume II of plan report.

SECTION. 6. 7. METHOD OF TREATMENT

6.7.1.1. The bamboos are in the great demand and it will be harvested under periodic thinning of the clumps. A felling cycle of three years have been fixed as it has been found that the yield reduces considerably at a short rotation of 2 years. 1st and 2nd year bamboo culms provide food and nourishment to rhizomes under soil and should not be cut. They are also deficient in lignifications and are brittle and highly vulnerable to fungus attack. Only 3rd year culms are fit for exploitation. To avoid crooked growth of bamboo clump it is essential that few mature culms which actually contribute for the growth and reproduction of new shoots are left out in the clump. The practice of leaving eight mature culms (more than one year old) in each clump has been standardized.

SECTION .6.8. CUTTING CYCLE

6.8.1.1. Harvesting of bamboo will be done on a cutting cycle of 3 years and for this each felling series is divided into three cutting sections, namely, A, B and C approximately as equiproductive as possible.
6.8.1.2. The Silvicultural system followed is coppice selection system. Rhizomes are stems of bamboo plant.

SECTION .6.9. METHOD OF EXECUTION OF HARVESTING

6.9.1.1. DEMARCATION OF COUPE. Demarcation of coupes will be carried out in the months of April-May (before onset of monsoon) in that year in which the coupes become due for harvesting well before the working season starts by erecting wooden posts at suitable intervals. On the wooden posts compartment number, coupe and name of the felling series will be written.
6.9.1.2. Sample plots will be laid down to estimate the quantity of bamboo available in the coupe after rainy season. The sampling will be carried under strict monitoring by Range Forest Officer and thoroughly verified by Assistant Conservator of Forests in charge. Deputy Conservator of Forests will also verify some plots to follow the principle of sustainability and to avoid excessive felling.

SECTION .6. 10. IDENTIFICATION OF BAMBOOS

6.10.1.1. Since the marking of bamboo is highly selective, it is essential to distinguish current year or a previous year or mature culms from each other.

(1) Current year. Culms sheath is present on lower half of the culms, branches are present throughout the length of the culms and white bloom is present abundantly and comes off easily.

(2) Second year. Culms sheath is absent; branches are present practically at all nodes. White bloom is patchy and comes off easily.

(3) Third Year. Culms sheath absent, branches are present practically at all nodes, white bloom is absent, and are replaced by blackish gray.

SECTION 6.11. METHOD OF WORKING.

6.11.1.1 . Present practice of working bamboo forests areas on three years cutting cycle is hereby prescribed to be continued as follows:

(1) No harvesting works should be permitted between 15th June to 30th September.

(2) No culms below the age of two years will be felled.

(3) 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.

(4) In a mature clump the following types of culms (green and living) will be retained.
   (a) All current season's (i.e. less than one year old) culms.
   (b) From the rest culms equal in number to the current season's (i.e. less than one Year old) culms or eight, whichever is more.

(5) The remaining culms will be considered available for harvesting.

(6) The cutting height of culms will be between 15 cm to 45 cm above the ground level i.e. above the first internodes above the ground. The cut shall be slant with a sharp instrument.

(7) In case of any flowering, no culms from flowered clump shall be felled in the year of flowering.

(8) No clump should be considered fit for harvesting unless it contains more than 8 mature culms (one year as well as two years old included).

(9) Harvesting of bamboo shall be done in a manner so as to ensure that the retained culms are evenly spaced and that some mature culms i.e. more than two years old are retained on periphery for the purposes of support to the new culms.

(10) Following Acts will be strictly prohibited.
   (i) Digging of rhizome.
   (ii) Lopping of bamboo culms for fodder.
   (iii) Use of tender bamboo culms for bundling.
   (iv) Use of bamboo new shoots for consumption.
   (v) Climbers infesting with growth of bamboo clump shall be cut.

(11) A clump will be distinguished as an independent clump where its periphery is easily discernible from the adjacent clumps, irrespective of its distance from other. Only when

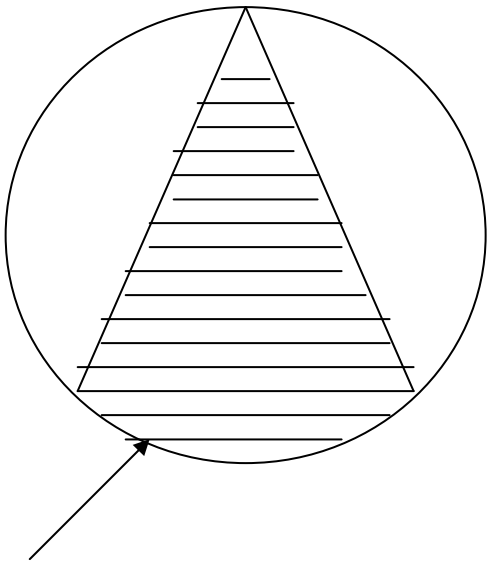
such a distinction is not possible, two clumps within one meter distance will be considered as one.

(12) The exposed bamboo or rhizome on the periphery should be covered with the slash and earth to provide nourishment to spreading rhizomes and thus promoting peripheral growth of culms.

(13) Often soft flexible, imperfectly lignified, less than three shoots are to be supplied to Burads for basket weaving much against the silvicultural norms. But in that case an equal number of old culms, which would otherwise be cut, must be preserved as a set off in that working clump.

6.11.1.2. It is observed in the field that the congested clumps are seldom worked. It leads to more congestion in the crop. Also it is a natural loss to society. In such congested clumps, opening should be done in the Wedge form cutting about one third of the existing bamboo irrespective of the age.

SHAPE OF REMOVAL OF CONGESTION



Area to be cleared of bamboo

SECTION .6.12.BAMBOO FLOWERING. -

6.12.1.1. Flowering is either periodic or annual. It is either gregarious, sporadic or both. Gregarious flowering is usually followed by the death of clumps, but in some cases of sporadic flowering, the clumps do not die after flowering. The gregarious flowering proceeds from one end of the forest to another in waves. In two to three years the entire forest flowers. Because of this phenomenon, bamboo flowering is an important event to reckon with in estimates of sustained supplies. The common bamboo *(Dendrocalamus strictus)* found in this area shows an irregular flowering in which one or few culms in one clump or a few clumps in one locality flower at any one time. While at other times all culms of one clump and all

clumps in one district are simultaneously covered with flowers. The physiology of bamboo flowering is still not fully understood. Rhizome planted away from the parent rhizome also maintains the physiological cycle of the parent. There is also a belief that bamboo flowering synchronizes with famine year. This is accountable to the fact that drought period hastens up flowering. It is also noticed that in the year previous to flowering no new shoots are put up. In case of *Dendrocalamus strictus*, it has been observed that intensity of flowering varies from locality to locality and from year to year in the same locality.

6.12.1.2. After the gregarious flowering and subsequent death of old bamboos, the profuse regeneration of bamboo comes up. Many a time's fallen seeds are attacked by fungus which destroys the seeds. In order to avoid fungus attack, a mild solution of fungicide may be sprayed over the seeds. The viability of the bamboo seeds is very less i.e. hardly a month or so. Therefore the seeds should be immediately collected and spread manually in the deficient areas. It takes nearly eight years for new regeneration to reach the exploitable size, but often it takes considerably more time. The following prescriptions shall be followed while dealing with natural regeneration of bamboo.

6.12.1.3. The areas where clump formation has not yet completed.

(1) The area should be thoroughly gone over and 80 cm diameter foci at the rate of 250 per hectare should be formed and distributed evenly over the whole area.

(2) All the rank growth and even bamboo seedlings around the foci formed above and up to a distance of 1.5 m all around from each focus should be cleared so that the growth of the bamboo seedlings in the selected foci is not hampered. If this is not done, it will lead to a switch growth.

(3) All climbers within and around the foci up to 1.5 m should be completely removed.

(4) The whole area should be strictly protected from fire and grazing.

6.12.1.4. In areas where clump formation has commenced, but the crop is yet immature for exploitation.

(1) The 250 foci per hectare initially established may be reduced to 125 per hectare well distributed over the whole area retaining only foci containing promising and removing switch culms.

(2) From the selected foci, all badly grown, twisted and otherwise damaged culms should be removed.

(3) All climbers within and around the foci upto a distance of 1.5 m should be completely removed.

(4) The trees overtopping or likely to overtop the bamboo clump should be thinned.

(5) The whole area should be strictly protected from fire and grazing

6.12.1.4. Crop age above 8 years. When the crop age is above 8 years, the clump formation is normally completed and clumps are mature enough for exploitation. The treatment during this period will be of the nature of exploitation-cum-tending. The cutting rules already prescribed in the earlier paragraphs, will be applied here.

SECTION .6.13 .OTHER REGULATIONS

6.13.1.1. FIRE PROTECTION. Fires cause extensive damage to the new shoots of bamboos and, therefore, these areas must be completely protected from fire by removing all debris from the forest in the form of cleaning.

6.13.1.2. GRAZING. These areas should be protected from grazing especially after flowering and in the rainy seasons in which the recruitment of new culms takes place.

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CHAPTER-VII

WORKING PLAN FOR NWFP (NON WOOD FOREST PRODUCE) (OVERLAPPING) WORKING CIRCLE

SECTION: 7.1: GENERAL CONSTITUTION OF THE WORKING CIRCLE:

7.1.1.1: This is an overlapping working circle covering the entire forest area of the tract dealt with. The non-wood forest produce includes both minor forest produce (MFP) and also the medicinal plants found in this tract. The tract is rich in non wood forest produces.

SECTION: 7.2: NON WOOD FOREST PRODUCES OF THE TRACT:

7.2.1: MINOR FOREST PRODUCE (MFP):

7.2.1.1:-There are numerous minor forests produce available in this tract and are found in almost entire tract with varying degree. These contribute sizeable revenue to the State Exchequer as well as generate employment to local forest dwellers directly or indirectly. MFP's play an important role in rural economy.

7.2.1.2: The important non wood forest produce, found in this tract are *Moha* Flower, *Moha* Todi (Moha seed), *Bamboo*, *Tendu* Leaves, *Myrobalon (Hirda, Beheda, and Aonla), Charoli, Honey, Gum, Broom Grass* etc. The compartment wise distribution of a few important species in different girth-classes as per analysis of tree enumeration data have been given in plan in Appendix № II.

7.2.2: MEDICINAL PLANTS:

7.2.2.1: The tract is rich in variety of medicinal plants which are used for curing various ailments by the local people. Medicinal plants occupy an important position in the socio-cultural, spiritual and medicinal arena of local villagers/tribes. Their sustainable management and harvesting can conserve bio-diversity, sustain human and environmental health, generate employment and earn foreign exchange by promoting exports.

7.2.2.2: The importance of medicinal plants and their uses are now world wide felt need of humanity. Even World Health Organisation (WHO) is concerned about this. These plants are not only necessary for maintaining the environmental balance and biodiversity, but also they are looked upon as the future source of Medicare of humanity. As most of the resources are still to be explored and their proper uses are yet to be brought to the knowledge domain of the people ar grass roots and acceptable level. Sironcha Forest Division may be looked upon as a treasure for future as far as medicinal plants are concerned. But the present methods of extraction of medicinal plants in the tract are not conducive for future conservation. The methods of non-destructive harvesting are also not known to the common people.

7.2.2.3: For sustainable and ecological development of medicinal plants it has been realized that medicinal plants conservation in the tract need to be intensified Field surveys and studies are required at micro level for *in situ* conservation. The present inventory survey by the Survey of Forest Resources (SOFR) Units is at macro level and does not

give true picture. The timing of surveys of resources by SOFR is after rainy season. It is not appropriate for NTFP. By the time surveys are conducted most of the herbaceous plants disappear due to their life cycle. Also mere identification of species does not suffice. Survey should be exhaustive and at the appropriate time with respect to NTFP species, which are annual and have short life cycle. This needs to be done by the territorial field staff.

7.2.2.4:- The important medicinal plants which have been identified in this tract have been given in the following table:

Table No-100
Table showing list of medicinal plants

Family/Botanical Name	Local Name	Uses
Acanthaceae :		
1 Andrographis paniculata	*Koyekutta*	Decoction as anti-malarial and anti-pyretic.
2 Adathoda zeylanica	*Urdus*	Decoction as anti-arthritis, anti-rheumatic; extract as expectorant.
3Barleria cristata	*Gattuguru*	Extract to stop gum bleeding
4 Hemigraphis latebrosa	*Budilsi cettu*	Extract to cure ear pain
5 Hygrophila auriculata	*Untskatra*	Decoction as anti-rheumatic, and extract as anti, helminthitic; root extract, anti-dysenteric.
6 *Justica betonica*	Tellaranthu	Anti-diassoad and anti-diabetic.
Amaranthaceae :		
7 *Achyranthus aspera*	Aghada, chirchita	Root applied externally as abortifacient.
8 *Amaranthus spinosus*	Kotikanta	Extract to cure constipation.
Amaryllidaceae :		
9 *Crinum defixum*	Gondali kanda	Edible as antidote for snake-bite.
Anacardiaceae :		
10. *Lannea grandis*	Mavai	Decoction as febrifuge.
11 *Semecarpus anacardium*	Jid cettu	Oil applied on warts,expectorant and ring worm infection.
Aristolochiaceae :		
12 *Aristolochia indica*	Sapsund	Decoction given to cure Jaundice
Apiaceae :		
13 *Centella asiatic*	Bramhi	Extract as blood purifier
Asclpiadaceae :		
14 *Holostemma annularis*	Dudhurli	Root used in diabetes, gonorrhoea
Apocynaceae :		
15*Holarrhena antidysenterica*	Kuda	Bark decoction to cure vene- ral disease and fruit as anti- dysentric
16 *Ichnocarpus frutescens*	Behouri	Root extract used in jaundice and diabetes.
Araceae :		
17Amorphophallus campanulatus	Suran	Tuber as anti-septic, carminative Useful in dysentery and Rheumatism,

		stomachic, tonic, restorative
Asclepidaceae		
18 Calatropis gigantea	Zilla cettu	Latex as anti-bacterial anti- Septic, anti-asthma, expectorant
19 Pergularia daemia	Utaran Vel	Extract as purgative and Expectorant
Bombacaceae :		
20 *Bombax ceiba*	Katsawar	Extract given to cure Leucorrhoea.
Burseraceae		
21 *Boswellia serrata*	Salai	Gum anti-diabetic.
Bignoniaceae :		
22 *Oroxylum indicum*	Tandri Cettu	Bark decoction anti-dysentric, Vermifuge and refrigerant
Barringtonaceae :		
23 Barringtonia acutangula	Piwar	Seeds expectorant
Caeselpiniaceae :		
24 Cassia tora	Cheorofa	Extract to cure skin infections
25 Cassia absus	Kantha Cettu	Seed extract in opthalmic disease
26 Cassia fistula	Rel	Extract to cure stomachache
Boraginaceae :		
27 *Heliotropium indicum*	Bhurundi	Extract as emmenagogue
Celastraceae :		
28 *Celastrlus paniculata*	Peng	Seed oil rubifacient and applied in eczema and ringworm infections.
Cleomaceae:		
29Gynandropsis pentaphylla	Ayanti Cettu	Extract to cure earpain, anti-bacterial and anti-septic.
Costaceae :		
30 Costus speciosus	Keyo Kanda	Rhizome mixed with roots of Nicotiana tabacum and given as anti- rheumatic and anti-arthritis
Cochlospermaceae :		
31Cochlospermum religiosum	Gumgum	Extract as anti-bacterial and anti-septic.
Cyperaceae :		
32 Cyperus rotundus	Motha	Rhizome astringent and diuretic.
33 Scirpus grossus	Khilyari kanda	Tuber edible as tonic and appetiser
Cassythaceae		
34 *Cassytha filiformis*	Uoorbela	Extract applied to cure baldness
Combretaceae :		
35 Anogeissus latifolia	Dhawda	Gum to cure amebic dysentry
36 Combretum decandrum	Rampi	Extract as anti-septic, seed oil to Cure eczema and ringworm
37 Terminalia chebula	Hirda	Fruit extract to cure toung ulcers and also as digestive, caraminative.

38 Terminalia bellerica	Beheda	Seeds anti-diarrhoeal digestive and Caraminative.
39 Calycopteris floribunda	Pandhri Zilbuti	Decoction as carminative and Diuretic
Convolvulaceae :		
40 Ipomoea pestigridis	Maryadvel	Root as diuretic and anti-inflammatory.
41 Rivea hypocrateriformis	Phangi	Root diuretic
Compositae (Asteraceae):		
42 Vicoa indica	Sankuli	Extract to induce anti-fertility in Man
43 Centipeda minima	Nanshikani	Extract vermifuge
44 Eclipta alba	Makka	Extract as anti- bacterial and anti-septic
45 Echinops echinatus		Root extract as purgative
46 Elephantophus scaber	Mattu	Root extract anti-inflammatory
47 Oligochaeta ramosa	Hitta Cettu	Extract as anti - helminthitic, Purgative
48 Spilanthus paniculata	Tarholi	Extract as tonic
49 Ageratum conyzoides	Dhanota	Decoction given internally as Anti-rheumatice.
Cucurbitaceae :		
50 *Citrullus colocynthis*	Indryan	Roots and fruits as purgative
Convolvulaceae :		
51 Merremia emargimata	Hadjodi	Poultice applied on bone fractures.
52 Rivea hypercratiformis	Pidma Za	Extract as anti – tumour.
Dioscoreaceae :		
53 *Dioscorea hispida*	Tikhoor Kanda	Tuber applied as anti-bacterial and anti-inflammatory.
Dilleniaceae :		
54 *Dillenia pentagyna*	Michud	Fruit appetiser.
Ebenaceae :		
55Diospyros melanoxylon	Tendu	Gum chewed with piper betal to Induce sterlity in females.
Euphorbiaceae		
56 *Macaranga tomentosa*	Zilla Marha	Seed oil as anti-septic, anti- biotic and purgative.
57 Kirganelia reticalata	Khareta	Branches as toothbrush.
58 Acalypha indica	Kappi Cettu	Extract given internally for dog bite.
59 Bridelia retusa	Jonna	Extract as diuretic and branches as Toothbrush.
60Euphorbia dracunculoides	Nijki Dudhi	Decoction given to cure veneral Diseases.
61Jatropa gossypifolia	Chandra jyoti	Juice applied on conjuctivitis.
62 Chrozophora plicata	Karsa	Juice and docoction as anti-fetility, Stimulant and refrigirant
63 Phyllanthus virgatus	Dudhi	Juice as galactogouge
64 Mallotus philippensis	Shendri	Fruit pubescence used to cure peptic ulcers
Ehretiaceae :		

65 *Ehretia laevis*	Datrang	Bark extract used in dropsy, Conjuctivitis and cataracts.
Flacourtiaceae :		
66 *Flacourtia ramontchi*		Fruit anti-jaundice.
Fabaceae :		
67 Abrus precatorius	Gurjool	Extract anti-inflammatory.
68 Mucuna pruriens	Kachkur	Root extract anthelminthitic.
69 Butea superba	Monthu fool	Bark as refrigerant and digestive.
70 Canvalia gladiata	Sem Bansim	Extract caraminative.
71 Desmodium velutinum	Dayampurka	Fumigation as anti-epileptic, extract as anti-pyretic and analgestic. .
72 Indigofera cordifolia	Kolyari	Extract analgesic anti-pyretic.
73 Pongamia pinnata	Goranji	Seed oil eczema, anti-pyretic.
74 Pterocarpus marsupium	Nameli Cettu	Wood extract anti-diabetic.
75 Rhyncosia minima	Jangli Ulva	Seed extract anti-pyretic if given With Piper longum .
76 Tephrosia purpurea	Tagres Fool	Decoction as appetiser and tonic.
Gentinaceae :		
77 *Centarium roxblurghii*	Chiryata	Used as bitter tonic and caraminative.
Hypoxidaceae :		
78 *Curculigo orchioides*	Kewarkanda	Decoction to cure spermatorrhoea
Lamiaceae :		
79 Leonotis nepetifolia	Bahikusjyar	Extract as anti-septic and anti-biotic; anti-tumour property also reported.
80Colebrookea oppositifolia	Lirka Marha	Extract as cardiac tonic.
81 Leucas aspera	Guma	Decoction to cure excess bile secretion.
82 Leucas montana	Guma	Decoction as anti-pyretic and anti-biotic.
83 Acrocephalus indicus	Cisri Cettu	Extract as oxytocic.
84 Ocimum basilicum	Bodulsa cettu	Seeds anti-dysentric.
85 Anisomeles malabaricum	Chikta	Root extract for insanity and mental disorder.
Lecythidaceae :		
86 *Litsa monopetala*	Gurpa Marha	Fruits are diuretic, anti-diarrhoeal .
Liliaceae		
87Chlorophytum tuberosum	Musli Gadda	Root as general tonic.
88 Gloriosa superba	Karkari	Root extract as abortifacient
89 Scilla hyacinthiana	Dhor kanda	Tuber extract for asthma and cough
Loranthaceae :		
90 Viscum orientale	Gongai	Extract used as vermifuge.
91 Dendropthoe falcata	Bandha	Decoction to regularise menstrual Cycle.
Martyniaceae :		
92 *Martynia annua*	Garadu mukku	Fruits applied on tonsils and Anti-inflammatory.
Malvlaceae		
93 Sida glutinosa	Foolagalm Cettu	Root extract anti-rheumatic.

94 Sida cordata	Panchgo Cettu	Fumigation anti-epileptic.
95 Urena lobata	Gokru	Root extract anti-helminthitic.
Menispermaceae :		
96 *Cocculus hirsutus*	Vasanbel	Juice used for biliolus dyspepsia.
Mimosaceae :		
97 Xylia xylocarpa	Surya	Bark extract applied on leucoderma and vitiligo.
98 Pithecellobium dulce	Vilayati Chinch	Seed extract applied to stop bleeding
Molluginaceae :		
99 *Mollugo pentaphylla*	Jaharsa	Extract as stomachic, caraminative and tonic.
Moraceae :		
100 Ficus cunia	Disak marha	Fruit extract given to cure male genital diseases.
101 Ficus lacour	Parad	Extract to cure veneral diseases and excess bile secretion.
Nyctaginaceae :		
102 *Boerhavia repens*	Punarwa	Root applied in vagina to induce abortion.
Orchidaceae :		
103 Vanda tassellata	Kekdi Bandha	Extract anti-rheumatic.
104 Elulophia nuda	Budbar	Tuber as anti-tumour.
105 Geodorum dilatatlum	Gadda	Tuber extract cure stomach ulcer.
106 Habenaria stenopetala	Kazri pinger	Extract applies to cure cataract.
Onagraceae :		
107 *Ludwegia parviflora*	Bijband	Seeds to cure spermatorrhoea.
Opiliaceae :		
108 *Cansjera rheddii*	Kusurtonda	Fruits applied to cure night Blindness.
Ochnaceae :		
109 *Ochna obtusata*	Pivla Champaca	Flowers edible and used to stop leucorrhoea.
Oxalidaceae :		
110 *Biophytam sensitivum*	Lajari	Leaves chewed to increase sexual desire.
Polygonaceae :		
111 *Polygonum hydropiper*	Mangalgota	Extractused to induce sterlity in females.
Papiloniaceae :		
112 *Erythrina variegata*	Pangara	Leaves dieuretic and emmenagogue, seeds extract cures leucorrhoea.
Plumbaginaceae :		
113 *Plumbago zeylanica*	Chifraka Malam	Root extract as anti-arthritis and Anti-rheumatic.
Poaceae :		
114 *Sacciolepis interupta*	Gadgawa	Extract given to cure piles .
Rubiaceae :		
115 Gardenia gummifera	Vidgu	Gum as anti-septic and anti helminthitic.
116 Gardenia resinifera	Dikamali	Gum as anti-septic, anti helminthitic and purgative.
117 Borreria hispida	Gatiya	Extract on leucoderma.

118 Oldenlandia corymbosa	Kaimul	Extract as expectorant
119 Randia brandsii	Fipra pungari	Extract applied on skin tumour and expectorant.
Rhamnaceae :		
120 *Zizyphus rugosus*	Pandhra Bor	Root extract used as oxytoxic and analgesic.
Sapindaceae :		
121Cardiospermum helicacabum	Kapalphodi	Root diuretic, diaphoretic, laxative and anti-rheumatic .
Samydaceae :		
122 *Casearia graveolens*	Recha	Fruit decoction for colic pain; leaves and root extract refrigerant .
Solanaceae :		
123 Solanum ferox	Mulkayari	Extract oxytonic and anti-pyretic.
124 Solanum nigrum	Kacchipurdu	Extract as diuretic, anti-inflammatory and cardiac tonic.
125 Physalis peruviana	Phopadi	Extract as caraminative and decoction as anti-pyretic.
Scrophulariaceae :		
126 Scoparia dulcis	Ghada Tulas	Decoction as anti-pyretic.
127 Celsia coromandelina	Kutaki	Extract applied as anti- arthritis and anti-rheumatic.
128 Sopubia delphinifolia	Dudhali	Juice as astringent; also used in leucoderma and vitiligo.

SECTION-7. 3 : SPECIAL OBJECTS OF MANAGEMENT :

7.3.1.1:- As per the National Forest Policy, 1988 the development of non wood forest produce (NWFP) has been one of the objectives in forest management. Therefore, consistent with the above policy, the special objects of management are enunciated asbelows

(1) To manage NWFP and medicinal plants scientifically and to utilise the existing potential optimally and thereby to enhance the productivity of these species.
(2) To take measures for conservation and sustainable use of the specoies identified as NWFP.
(3) To generate employment for providing work to the local people and thereby improving their socio-economic conditions.
(4) To provide better and improved quality of life of tribals through inclusion of traditions which support and link their life styles into sustainable harvest and use of NWFP.
(5) To identify and conserve the forest areas rich in NWFP and medicinal plants.

SECTION:7. 4: METHOD OF TREATMENT :

7.4.1:NON WOOD FOREST PRODUCE :
7.4.1.1: The treatment to be given will be different for different types of **NON WOOD FOREST PRODUCE**. Therefore, each NWFP will have separate treatment as follows:

7.4.1.2:MOHA FLOWER: USE AND NUTRITIVE VALUE : Moha flower is a rich source of sugar, vitamins and calcium. The flower, in its ripe form, has almost 73% of all

sugar and is, therefore, even a better medium for fermentation than grapes. Moha flower is eaten raw and cooked. This is eaten also 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, sai* seeds, grains or other food or as sweet meat. Dried Moha flower is also boiled with rice and mixed with *wheat* flower and this provides a wholesome food. After drying it becomes valuable food additive to the tribal 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 ageing. It is reported to excite gastric irritation and produce other adverse effects. Redistilled and carefully prepared liquor is of 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.

7.4.1.3: Moha spirit prepared by distillation of liquid containing fermented moha flowers is the most important alcoholic drink in many of the tribal areas. It makes a potent drink and efforts are required to be made to refine it in modern distilleries. The flowers are also used for the preparation of certain kinds of non-alcoholic food drinks by some tribes. The flowers are also used for the preparation of vinegar. Moha having appreciable proteins and vitamins has valuable nutrition content. A syrup of good quality is prepared from the corollas by extraction with hot water and 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. Besides, moha trees has an important place in tribal folklore and religious beliefs. For example, moha flowers are used to forecast rain and moha tree is worshiped in the form of deity called “Mahugoria” in some parts adjoining to Chhattisgad State Border. The Madias (a native tribe) prefer to bury or cremate their dead bodies under a moha tree.

7.4.2:MOHA FRUIT: USE AND NUTRITIVE VALUE :

7.4.2.1: A ripe fruit has cream coloured epicarp, which is edible. Moha berries are eaten raw or cooked. They are also eaten by cattle, sheep, goats, monkey and parrots. They have medicinal value as well. Fruits felled on the ground are easily attacked by insects and ants and thus become unfit for human consumption.

7.4.2.2:-The moha seed yields oil. A thick oil light yellow in colour and extracted from the seeds, is used by forest tribes for cooking purposes, as an illuminance and hair oil. 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 to buttermilk to mask disagreeable odour. The oil finds use in medicines also.

7.4.2.3:-Crude oil has a deep colour, high acidity, unpleasant odour and bitter test. Refining and hydrogenation yield product similar to mutton fallow 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 greases and fatty alcohol. The oil is also used

for candles, as a batching oil in Jute Industry and as a raw material for the production of stearic acid.

7.4.2.4:-The yield of oil from the seeds depends on the efficiency of the equipments employed for crushing them. It is 20-30% by weight of the kernels when crushed in 'Ghanis', 34-37% in expellers and 40-47% when extracted by solvents.

7.4.2.5:- Moha oil have a set of characteristics. For this purpose ISI standards have been prescribed which are given in the following table:

Table No-101

TABLE SHOWING CHARACTERISTICS OF MOHA SEED OIL AS PER ISI STANDARDS:

SrNo	Characteristics	Grade		
		I	II	III
1	Moisture and insoluble impurities % by mass maximum	0.10	0.25	0.50
2	Colour in a ¼ in cell on the Loviband scale expressed are Y + 5R not deeper than	20	30	50
3	Refractive index at 40° C	1.459	to	1.460
4	Specific gravity at 30° C	0.862	to	0.875
5	Saponification	187	to	196
6	Iodine value	58	to	70
7	Unsaponfication matter % by mass	200	3	300
8	Acid value maximum	05	200	>20

7.4.2.6:- YIELD : - Moha trees start bearing flowers and fruits between 10^{th} to 15^{th} years of their planting. A study with reference to the yield of moha flowers and fruits has been conducted by the MVSS, Chandrapur in compartment № 195 Tadgaon Range of Bhamragarh Forest Division in the year 1992. The trees of different shapes and girth classes were selected for the purpose of this study The results obtained are given in the following table :

Table No-102

TABLE SHOWING THE YIELD FROM MOHA TREES –

SrNo	GBH in cm	Weight in Kg	
		Flower	Seed
1	076-090	0800	120
2	091-105	1000	100
3	106-120	1125	2000
4	136-150	1330	275
5	151-175	1300	380
6	176-190	1500	400
7	191-220	2000	430
	Average	**1234**	**272**

As the year 1992 was not a good seed year, the average obtained above is on flower side.

7.4.3: FORMATION OF UNITS AND COUPES:

7.4.3.1:- The range will be the unit of working for the purpose of this working circle Since operation is to be carried out annually throughout the area and so the unit will be the coupe in this case.

7.4.3.2: AGENCIES FOR COLLECTION: The collection of moha flowers and seeds is presently being done by individuals in each village. Normally they confine themselves around their villages only to collect moha flowers and seeds. Almost entire moha flower available are collected by the locals, there is no need to have separate agency for collection.

7.4.3.3:-MARKET : The collection of moha flower and seed was is done by the tribals and purchase of the same is done earlier by the Tribal Development Corporation (TDC) a Maharashtra Government Undertaking, which comes under Monopoly Act. Presently, no proper market is available. They sell it to local purchaser. But value added operation is not done. Hence the locals are not getting proper prices for it. Forest Department should evolve a mechanism of value addition through JFM in the tract itself and giving maximum benefits to people. Even better market facilities should be offered at appropriate level. Forest Department should be given the role of market facilitator to win over the confidence of people for protection and conservation of forest and forest produces.

7.4.3.4: LOCAL CONSUMPTION: - Taking moha liquor is part and parcel of the tribal life. They cannot simply live without it. It can be said that it is one of the life supporting items for the tribals. But the crude spirit, prepared by the tribals in local "Bhatti" is having a number of health hazardous ingredients, which are bound to lead the people poor and unhealthy state of health as well as lower their life expectancy. The comparison of crude liquor with distilled and redistilled liquor forces us to think over an act of welfare for the poor tribals by way of improving the quality of life supporting items. Use of moha oil in crude form is not conducive for proper health. Thus the moha flowers and fruits are people friendly as far as the opportunity for gainful employment is concerned but the traditional mode of using the products are some sort of hazards for health. Thus it becomes necessary on the part of Welfare State through Forest Department to improve the value of the product and improve the quality of product for safer consumption.

7.4.3.5: OTHER REGULATIONS:

(1) Compartment wise list of moha trees should be prepared and maintained at beat, round, range and division levels.
(2) The marked moha trees should be allotted to particular individual family for collection of flowers and fruits depending upon the number of trees and number of families around it under Joint Forest Management.
(3) As it is a bare fact that one of the important reasons of forest fire is the burning of leaf litter on ground under moha trees by forest dwellers to collect moha flowers and fruits. Therefore, before the start of flowers falling, the ground under the moha tree should be cleaned by the family to whom the trees have been allotted. The concerned Beat Guard will supervise the work and failure on this part should be treated as failure of Duty by the Beat Forest Guard.
(4) The measures for enhancing the production and productivity by local means should be explored. Local people should encourage adopting the trees and using the necessary work to enhance its production.

7.4.4. GUM:

7.4.4.1: USE AND VALUE:-*Kulu* (*Sterculia urens)*, D*haoda (Anogeissus latifolia)* and Salai *(Boswellia serrata)* gum 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 also 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. It has also been found suitable in the manufacture of elastic adhesive, lacquers, oil cloth compositions, ink varnish, paints and perfumery. *Kulu* gum is the costliest gum and is having export potential. *Dhaoda* gum is very good for the preparation of many food articles.

7.4.4.2:YIELD : -The compartment wise estimated distribution of such trees in different girth classes have been given in this plan in Volume II, Appendix № Lithe 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 field has got potential for employment generation and revenue earning. Besides, the regulations of the collection are very important from protection of forest from fire point of view.

7.4.4.3: TAPPING RULES:-The rules for tapping of gum, derived by the FRI, Dehradun, are as follows:

(1) The tapping season will commence from November to end of May each year. No tree below 90 cm in girth will be tapped.
(2) Tapping will be confined to the main bole of trees between 15 cm from ground level to the point from which first branch is given off.
(3) Only trees above 90 cm in girth at breast height will be tapped.
(4) Each tree will be tapped continuously for 3 years and will be given a rest for 3 years thereafter. The second tapping cycle will begin in the 7^{th} year after the commencement of tapping season and will continue for another period of 3 years.
(5) The initial blaze of 20 cm wide and 30 cm in length or height may be made in the month of November on trees at 15 cm above ground level with a sharp edge having 75 cm wide blade the blaze is made 06 cm deep in the dark. Blaze may be made horizontally leaving approximately equal space between the two 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 adze.
(6) The guggul starts oozing out soon after blaze are made and may be collected initially after a month, i.e. about December when the blazes may also be freshened. Subsequent collections and freshening may be done fortnightly upto May. Thus 12 freshening may be required to be made during the year.
(7) In each freshening the lower surface is not to be freshened. The edge may be scraped so that only 38 cm increase is on either side in width at the end of 12 freshening. This means that about 03 cm should be scraped off either side in width in each freshening.
(8) 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.

(9) The number of blazes to be made on each tree will depend on its girth at breast height as given in the following table:

Table No-103
TABLE SHOWING THE NUMBER OF BLAZES ON TREE FOR GUM

SrNo	Girth at breast height	Max no of blazes to be made on each trees
1	0.9 m to 1.3 m	2
2	1.3 m to 2.0 m	3
3	2.0 m to 3.0 m	4
4	Over 3.0 m	1 Blaze for every 45 cm girth in addition to category 3 above

(10) No fresh blaze will be made on the partially healed up surface or old wounds. Each blaze will be in a shape of parabola with a 2.5 cm side base. The curved side of the parabola will be upwards and of height not more than 7.5 cm and the depth of the blaze will not exceed 0.6 cm in the wood

(11) At the end of the season, the height of the blaze shall not be greater than 12.5 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.

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 In the second cycle i.e. in the 7^{th} year (after three years rest) new blazes will be made in the same way in the unglazed 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 operations will be repeated till unglazed is fully covered.

7.4.4.4: FORMATION OF UNITS: - Range is the unit. Each unit will be worked on yearly basis.

7.4.4.5: AGENCY: - All operations will be carried out either through member of Joint Forest Management committees or the agency decided by the Government.

7.4.4.6: MARKET: - As the TDC (Tribal Development Corporation, a Maharashtra Government Undertaking) has monopoly purchaser rights, rates for purchase are decided by it. Value added activities need to be taken to enhance the income of the poor people collecting it. Export of raw or finished goods should also be thought of.

7.4.4.7: OTHER REGULATIONS:-

(i) The compartment wise list of such trees should be prepared and maintained at beat, round, range and division levels.

(ii) Cleaning around the trees to facilitate gum collection and to avoid fire should be done.

(iii) To improve the stocking of salai trees soil around these trees should be dug up in the form of a ring with a radius 1.5 times that of crown. By doing so roots get injured and root suckers come out profusely.

(iv) Gum producing trees should be reserved from felling.

(v) Strict watch is necessary to enforce tapping rules.

7.4.5:TENDU LEAVES:

7.4.5.1:USE :-Tendu Leaves is one of the most important NON WOOD FOREST PRODUCE of the tract which gives handsome revenue to exchequer and opportunity for gainful employment to forest dwelling people. Tendu Leaf is used for manufacture of bidi. Presently people are benefited from it only by way of getting wages for collection of leaves

7.4.5.2:YIELD :- The production of tendu leaves and royalty obtained in the last ten years are furnished in the following table :

Table No-104

TABLE-SHOWING THE PRODUCTION AND REVENUE:

SrNo	Year	Yield in std bag(1000)	Royalty in Rs(Lakhs)
1	1991-92	81	206
2	1992-93	105	267
3	1993-94	41	139
4	1994-95	49	242
5	1995-96	51	231
6	1996-97	51	237
7	1997-98	50	168
8	1998-99	45	214
9	1999-2000	57	301
10	2000-01	56	338
11	2001-02	52	277
12	2002-03	55	224
13	2003-04	Not auctioned due naxalite threat.	
14	2004-05	27	77 Partially auctioned.

7.4.5.3:- To get the good flush of tendu leaves, pruning and pollarding of tendu trees are carried out every year. No other scientific efforts are made to augment the tendu leaves production in this tract so far. Sometimes deliberate fire is caused by the people in connivance with license holders to get good flush of leaves which causes adverse impact on establishment of regeneration. During pruning all small size plants, whether seed origin seedlings or coppice origin seedlings, are cut every year resulting into threat to future seed bearers. If such type of operations continues, the seed bearer will go on diminishing season after season.

7.4.5.4:FORMATION OF UNITS :- The Government of Maharashtra had constituted tendu units for the purpose of regulation of trade of tendu leaves under its Forest Produce (Regulation of Trade) Act, !969 vide its № MFP. 2182 / 240911 / F-1 dated 19th November 1983. In the tract dealt with 35 tendu units have been constituted which are as follows:

Table No-105

Table showing Tendu Units and estimated yield

Unit №	**Range**	**Name of the Unit**	**Single/Groups**	**Yield std. Bags.**
1	Pranhita	Deolmari	Group I	2000
2		Guddigudam		
3		Venkatapur		2200

4	Kamlapur	Rajaram		2200
5		Chhallewada	Group II	2200
6		Korepalli		
7		Kodsepalli		1100
8		Mandra		1300
9		Tonder		1800
10		Kamlapur	Group III	1800
11		Kolamarka		
12	Jimalgatta	Regulwahi	Group IV	1800
13		Timram		
14		Karancha		
15		Umanoor		1400
16		Raspalli	Group V	2800
17		Govindgaon		
18		Gundera		
19		Jimalgatta		
20	Dechali	Kistapur		1900
21		Dechali		2000
22		Petha	Group VI	2500
23		Kalled		
24	Sironcha	Moyabinpetha	Group VII	3200
25		Ramanapetha		
26		Rompalli		3300
27		Bamni		3300
28		Sirkonda		1400
29		Sironcha		2400
30		Pentipaka	Group VIII	2900
31		Wardham		
32	Asarali	Jhinganoor		2800
33		Kopela		2400
34		Asarali	Group IX	5100
35		Ankisha		
TOTAL NOTIFIED YIELD IN STANDARD BAGS:				**53800**

7.4.5.5: AGENCY FOR TENDU LEAVES COLLECTION: - With the enactment of "Maharashtra Forest Produce (Regulation of Trade) Act, 1969" the trade in tendu leaves has been Nationalised under this Act, tendu units are auctioned to pluck process and dispose off tendu leaves by tender. Successful tenders are referred as licensee. Prior to 1991, the standard bag system was in practice. But after that the lump sum system has been adopted. In the current system, the lump sum cum notified yield is prescribed for each unit. The leaves puckers are given wages as per the wage decided by government on year to year basis. In the shadow of Naxalites puckers are demanding more wages than sanctioned by the government. Due to interference by the Naxalites the licensees are not coming forward to offer the price for these units. In 2003 season entire tract remained unallotted. In 2004 seasons 10 out of 23 units/group of units got offers.

7.4.5.6: MARKET OF TENDU LEAVES: - The tendu leaves are used in bidi manufacturing as wrapper to bidi. Bidi manufacturing is concentrated in Central India. Licensees pluck, process and dispose off the leaves to bidi manufacturing workshops

inside or outside Maharashtra. Pluckers have no say in bidi manufacturing. It may be contemplated to have manufacturing units in vicinity to production side to have more employment, means more earning leading to better socio economic conditions and affiliation to forests for its protection and conservation.

7.4.5.7: OTHER REGULATIONS:-

(1) To improve the tendu stocking, soil around tendu trees should be dug up 15 to 20 cm depth in a circular ring of diameter equal to that of the crown so as to promote root suckers. The trees of gbh more than 45 cm should be selected for such operation.
(2) Pruning and lopping should not be done yearly. It should be done at an interval of 3 years to allow some seedlings to get established and become the future tree crop.

7.4.6: BAMBOO:-

7.4.6.1. This is one of the important forest produce of this tract. This is popularly known as poor man's timber the local people make use of it in a variety of ways. Tribal people use tender rhizomes as vegetable during the monsoon. Besides, it is used by Burads to prepare bamboos articles. Local people use it for construction of huts, houses, cattle sheds and fencing. The bamboo is also used in a number of industries such as Paper and Pulp, Ice cream etc. Details have been discussed in separate chapter VI in part II as Bamboo (Overlapping) Working Circle in this plan

.

7.4.7.: MYRABOLONS, DIKAMALI AND NIRMALI FRUITS:-

7.4.7.1: USE: - These minor forest produces are used in many ways. Hirda, Beheda and Aonla are most common amongst Myrobalon. These are of high medicinal value and are used in many Ayurvedic medicines. Hirda and Beheda are given to child in villages invariably for cold, cough and stomach disorder. Dikamali and Nirmali fruits are used in chemicals and in many other industries.

7.4.7.2: YIELD: - So far no study has been conducted to assess the yield of fruits for trees of such species. The range wise distribution of such species in different girth classes have been given in draft plan report on the basis of enumeration of forest resources. It is envisaged that under Joint Forest Management, committee members in the area assigned to them should enumerate the trees of these species and yield should be recorded yearly in registers. All such data will be collected in the division office and updated fro time to time.

7.4.7.3: FORMATION OF UNITS AND COUPES: - The range will be the unit. Since working is annual and covers the entire area and so unit will also be the coupe.

7.4.7.4: AGENCY FOR HARVESTING:-At present, monopoly over collection and disposal of MFP is of TDC. But in the light of Extension of Panchayat Raj to Schedule areas in respect of ownership over minor forest produces, these forest produces should be disposed off as per the mode adopted by the Panchayat Raj Institutions. Because entire tract is in Schedule areas, Forest Department will facilitate in providing technical guidance about non destructive collection of these forest produces.

7.4.7.5: MARKET: -Panchayat Raj Institution should market the minor forest produces with a view to reduce the burden of forest staffs and enable them to devote more for protection and conservation of forests and environment.

7.4.7.6: OTHER REGULATIONS:-

(1) The annual out turn of these forest produces should be maintained at range and division levels.
(2) The detailed list of such species should be prepared and maintained at beat, round, range and division levels.
(3) These species should be excluded from felling.

7.4.8: BROOM GRASS:-

8.4.8.1: USE: - This grass is used in preparation of broom which is usually used in houses. It is a seasonal crop and localized one.

7.4.8.2: YIELD OF BROOM GRASS: - So far no formal study has been conducted to assess the yield of this grass.

7.4.8.3 FORMATION OF UNIT: - The Range will be the unit.

7.4.8.4: AGENCY: - As decided by the Panchayat Raj Institution under strict silvicultural guidance of forest staffs/officials.

7.4.8.5: OTHER REGULATIONS:-
(1) The areas suitable for this grass should be managed for grass production.
(2) The compartment wise details should be prepared and maintained at beat, round, range and division levels.
(3) The area should be fire protected.

7.4.9: KHAIR:-

7.4.9.1:-The khair tree is distributed more or less in all ranges of the division. Due to its prominent occurrence, Shri P.P.Joshi had formed a separate Khair (Overlapping) Working Circle in his Working Plan (1974-75 to 1983-84). Shri M.B.Mankare had prepared a working scheme for the ex-proprietary forests of Kamalapur, Pranhita, Dechali and Jimalgatta Ranges of South Chanda Division for the year 1970-71 to 1979-80 and incorporated a separate Khair (Overlapping) Working Circle comprising of an area of 5751.813 ha. Presently, this is not being properly used and as such no industry has been locally installed to consume the Khair for the production of Katha and its allied products. As this is very valuable species, its proper use is essential to increase the productivity of the area and for that taking it under the purview of scientific management is must.

7.4.9.2: PROPERTIES OF KHAIR:-Khair is known to occur on granite, gneiss, schist, quartzite, basalt, trap, limestone, conglomerate and lateritic soils. It grows best on porous alluvium composed of sand. It also occurs on black cotton soil. Khair is strong light demander. It is capable of growing in dry situations where almost every other species fails to survive. The tree coppices well upto moderate size and produces root suckers, particularly where the roots have been exposed. This character can be used for its propagation as has been suggested for Tendu Coppice shoots. However, it requires complete light for their development. Root and shoot cuttings can also be used for the method of propagation.

7.4.9.3:-The wood is very hard and heavy. The average weight at 12% moisture is about 1010 kg/m³ (ranging from 880 to 1170). The specific gravity of khair is 0.875 Growth rings are formed and are fairly distinct, demarcated by a fine, interrupted line of parenchyma occasionally accompanied by somewhat larger vessels. The timber is very hard and strong, very sturdy and moderately tough. The sap wood is not durable. The heartwood is very durable and is described by Pearson, "One of the most durable Indian Woods which is seldom, if ever attacked by white ants and fungi."

7.4.9.4: USE OF KHAIR: - The khair heartwood is chiefly used for the production of Katha and cutch since very long time. It is a valuable structural timber due to its natural durability of heartwood. This species has been classified as "Super Group" timber suitable for large spans more than 12 m and is placed as the first choice of selection for management structure (ISI : 1962). It is eminently suitable for tools and tool handles, especially for mallets and plane bodies. It is used for all kinds of agricultural implements and is excellent for making spokes and hubs of cart wheels. It is used for posts in house construction and for making rice pastels, oil expellers, gun butt etc. The spent heartwood is also used as fuel in the Katha-boiler and Katha bhatties. The charcoal of dead khair wood is much valued and used by goldsmiths. The calorie values of moisture free sapwood and heartwood are 5142 and 4946 calories respectively. The exhausted khair heartwood shavings can economically be utilized for making partition boards and decorative boards and also can be used as top of table for drawing room.

7.4.9.5: The results of experiments in Forest Research Institute (FRI), Deharadun on sapwood and spent heartwood of khair showed the profitable utilization of the same for producing bleached cellulose which will find use in multifarious cellulose based industries, like carboxy methyl cellulose, cellulose acetate and even for paper and paper boards if made available in large quantities.

7.4.9.6: Khair gum is considered to be of very good quality and it is a good substitute for gum Arabic. It is advisable that the khair trees should be tapped for some years to obtain gum prior to felling for katha production.

7.4.9.7: The bark has a stringent taste and it is useful in the treatment of snake bites and the paste of the bark is also useful for conjunctivitis. The juice of the fresh bark is given with asafoetida in haemoptysis (spitting of blood).

7.4.9.8: The khair is the species mainly of degraded miscellaneous forests the no of stems/ha (khair) and its distribution among different girth classes have been given in draft plan report. The yield of khair has not been estimated separately.

7.4.9.9: KATHA AND CUTCH:-Khair heartwood yields an astringent extract composed chemically of two primary constituents:

(1) KATHA (KATECHIN): A crystalline substance, of pale brown colour, soluble in hot water, but insoluble in cold water, sweetish in taste.

(2) CUTCH (CATECHU TANNIC ACID): A non crystalline substance, of dark brown colour and soluble in cold water and contains insoluble and some of gummy waters.

7.4.9.10:-Katha samples produced by different methods contain catechin content 30 to 70% and water soluble substance 5 to 7%. Generally the extract (mother liquor) of heartwood is found to contain the following ingredients:

Table No-106

Sr №	Products	Percentage
1	Catechu tannic acid (cutch)	81.0 %
2	Catechin (katha)	2.6%
3	Mucilage	6.8%
4	Residual matters	5.7%

7.4.9.11:-USE OF KATHA:-Katha is used in pan (Betel) for chewing purposes. It is a principal ingredient in the preparation of pan. Besides, it has many, medicinal uses. In Ayurvedic and Unani systems of medicine, cooling, digestive, useful in relaxed condition of throat mouth gums; and also in cough and diarrhea. Externally, it is used as a stringent and as a cooling application to ulcer boils and eruption of the skins.

7.4.9.12: USE OF CUTCH:-It is extensively used as a tanning material, for dying purposes and as a preservative for fishing net to impart them long life. It is also used for treating ropes and fabrics, which are liable to come in contact with sea water such as sailing ropes, sails, tents, canvas, mail bags etc. It is also used mostly as mordant in dying leather and as a retaining material. It is also used in the manufacture of stencil and printers, ink, in oil well drilling operations for reducing the viscosity of drilling mud (ONGC).

7.4.9.13: METHOD OF EXTRACTION OF KATHA:-The prevalent methods for extraction of katha & cutch from khair wood are by the factories and small scale manufacturers in the forests. Though, the extraction of katha and cutchin in the area is not done the area has potential to supply the khair in small scale. To maintain the ecology of the tract it is advisable not to set up any manufacturing unit in near future in the tract.

7.4.9.14:-DESCRIPTION OF INDIGENOUS METHOD OF KATHA MANUFACTURING: - The indigenous process which is commonly known as "Handi" method for the manufacture of edible katha is being followed in the India since centuries. In this process generally earthen vessels are used for various operations, viz extraction, evaporation, crystallization etc. This method was having a number of defects, which were removed by improved indigenous method devised by FRI, Dehradun. Outlines of the improved method of katha & cutch manufacturing are as follows

(1)

(2) PREPARATION OF CHIPS: The khair logs, after being removed of their bark and sap wood, are converted into thin chips by trained Labourers by means of hand axes.

(3) EXTRA CTION OF CHIPS:-The heartwood chips are boiled in the extractors of aluminum keeping the chips in the cages (basket) made of aluminum wire in order to avoid direct contract of the chips with heat. Each case takes a charge of about 12 kg of chips and are extracted with about 36 liters of water for about 2 hours in first stage at boiling temperature (chips and water should be in the ratio 1:3). The extraction is repeated second time with fresh water giving a boil for about 2 hrs. A third extract may also be taken if necessary in the same conditions. The extract (mother liquor) of the same chips is used for extracting a fresh batch of the chips.

(4) CONCENTRATION OF MOTHER LIQUOR:-These extracts are filtered through marking cloth and are collectively concentrated in open aluminum cauldrons (karahis)

by boiling with steam or with direct heat (Bhatties) to the requisite density of 1:08 to 1:113 depending upon the quality of heartwood and the weather conditions. Each charge is completed (concentrated within about 3 hrs**).**

(5) CRYSTALLIZATION :-After completion of concentration to the requisite density, the concentrated mother liquor is transferred in the aluminum crystallizer and allowed to stand aside in shade for slow crystallization of katha for about 2-3 days or more as the case may be depending upon the season. Seeding of cooled and concentrated liquid (mother liquor) with some crystals of good quality katha always accelerate the crystallization and separation of katha from the crystallized solution. The crystals of katha separate out on the bottom and the thick mass crystallized katha is separated from the mother liquor, which may again be seeded, if necessary, for a second crop of katha.

(6) FILTRATION :-The crystals of katha thus separated into a thick mass (like thick curd) are diluted with requisite amount of cold water and pumped through a hand operated filter press fitted with canvas cloth to separate the katha from the mother liquor A couple of washings with fresh cold water may be necessary to obtain fairly good quality of katha. Now the filtered mass katha is scraped off the canvas and put again under a hand screw press (book binder type). The last traces of tan liquor are thus drained out.

(7) TABLETING PROCESS: - The katha plate of about 2 cm thick is taken out from the wooden frame and cutter, made of copper or aluminum wire, with wood plate. These tablets are allowed to dry under shade, as open sun drying is injurious to the catechin which gets decomposed and blackened.

(8) CUTCH :- The mother liquor (cutch solution) obtained after separation of katha is further concentrated to a suitable consistency (when it gives a thread, while hot, lifting by means of a stick) so as to give a solid product of cutch on being poured into wooden frames or cakes of suitable sizes. The cutch naturally takes longer time to dry. It should also be dried under shade.

(9) No heavy capital layout is involved and the industry can satisfactorily be run by educated men as a cottage industry.

(10) ADDRESS FOR EQUIPMENT PROCUREMENT :-

(1) Filter press and other equipment:
M/s Batli Bhoy and Company
Post Box No 190 A, Forbes
Street Fort, Mubai – 1

(2)Chipping machines:
M/s Singhania Engineering Works,
84/25, Factory Area,
Kanpur – 121

(3) Pulveriser and Baby Boiler :
M/s Rank and Company
A95/3 Wazirpur Industrial Area,
Dehli – 110052

Available addresses have been written there may also be other places in Maharashtra from where; such equipments can be made available. This is for guidance to start preliminary survey etc. After starting the production of Katha, thought should be given for improving quality. By changing the process of manufacturing the quality of Katha can be improved

7.4.9.15: FORMATION OF UNITS: - No separate unit will be formed. The production of khair will be as per the prescriptions of SCI working Circle or that of Improvement Working Circle.

7.4.9.16:-AGENCY: - The harvesting of khair will not be done separately. It will be as given in SCI WC or I WC.

7.4.9.17:-OTHER REGULATIONS:-

(1) To increase the stocking of khair in the suitable sites, artificial planting should be carried out to supplement the natural regeneration.
(2) The record of production of khair should be maintained at Beat, Round, Range and Division levels. The Conservator of Forests will decide the form in which records are to be maintained.
(3) Gum tapping should be started in the coupe which will be due for felling after 5 years for gum tapping only mature trees should be used.
(4) In this working circle, subject has been written in short the objective is to draw the attention towards this and to translate into reality. By doing this the importance of NWFPs will increase and eventually they will be managed in better way and the economic status of the poor tribal will be elevated

7.5: MEDICINAL PLANTS

7.5.1.1: ANALYSIS AND VALUATION OF THE MEDICINAL PLANTS

7.5.1.1:Methodology for studying the medical plants-Survey etc: In order to assess the potential of areas rich in medicinal plants the field surveys were conducted by the Sironcha Forest Division in each range adopting the method of stratified random sampling. SOFR unit of Chandrapur also conducted enumeration of 1% of the entire tract for trees and shrubs. Enumeration of herbaceous plants and grasses could not be done as these species occur in monsoon season. It should be done by the territorial division.

7.5.1.2: MANAGEMENT OF THE AREA: - Medicinal plants are mainly herbaceous, tubers, shrubs and some trees. Hence the management of medicinal plants is the same as that of non wood forest produces. It is a new concept in forest management. Judicious utilization of medicinal plants need detailed studies about its occurrence, area, extent, phenology, production level and non destructive exploitation.

7.5.1.3: METHOD OF TREATMENT: - The involvement of Joint Forest Management Committees in management of medicinal plants to augment their income should be the basis of management. Division should facilitate the training for treatment of medicinal plants their product along with marketing**.** Help of taxonomists of local science college or university should also be sought for identification of plants. Creation of market links and bank guarantees for sale of produce will lead to generating confidence for forest management. Methodology to be adopted should be as follows:

(i) Selection of suitable non-degraded areas where medicinal plant collections are already underway.
(ii) Involvement of a competent local NGO for organizing the community.
(iii) Establishing a system of sustainable harvest based on collection guidelines for specific species that are informed by “conservation science”.
(iv) Joint management of forest sites by the local Forest Department and organized local communities. Assign specific forest areas to specific local village communities with clear delegation of responsibilities, privileges and full

accountability. Proceeds of the harvest of medicinal plants to be shared under the JFM framework.

(v) Creation of market links for sale of produce at the outset of the programmes.

(vi) Building and strengthening community institutions for sustainable management.

(vii) Only such plants/parts of the plant specified for each species whose medicinal values are recognized should be collected e.g. fruits and seeds of neem tree.

(viii) Removal of plants or plant parts of species other than the specified ones shall be totally prohibited.

(ix) Lopping of branches to gather buds, fruits or leaves shall be totally prohibited.

(x) Fruits and seeds that have fallen to the ground alone are to be collected. May be the branches can be gently shaken to facilitate the shading of fruits and seeds.

(xi) For each medicinal plant/tree species about 1-2 % of the population shall be left as seed bearers for encouraging natural regeneration and also seed collection. These trees shall be numbered and ring marked and no collection shall be done from these seed bearers.

(xii) Species to be raised for use in Primary Health Care, trade in the RF/PF areas will be listed out category wise, well in advance to facilitate nursery operation. Information already generated on nursery and plantation techniques for the chosen species will be used for artificial regeneration.

(xiii) Based on the outcome of the survey of the vegetation, the proportion of medicinally important species shall be increased while taking up reforestation works under eco-restoration and water augmentation programmes.

(xiv) Tending of coppice shoots/root stocks of existing trees shall be taken up and the natural regeneration shall be encouraged.

(xv) Seeds/seedlings shall be sown/planted in the barren patches and in the weeded and soil worked areas around the tree saplings. Medicinal plant species of the nature of the climbers can be planted close to the naturally existing trees and shrubs or their natural hosts.

(xvi) If contour trenching is carried out, the species mentioned in the previous Para can be raised on the mounds in the first year and in the trenches during the next year when some silt gets deposited in them.

(xvii) At convenient contour intervals, say 30 m shrubs like Kumari (Aooe barbensis), Adhatoda (*Justicia adhatoda*), Nochi (*Vitex negundo*) and Vettiver (*Vetiveria zizaniodes*) can be raised as vegetative barriers along the contour. These species can also be planted along the RF boundary. This will incidentally facilitate demarcation of the RF from the buffer zone.

(xix) In the swamps, along the stream banks and on the waterspread areas and aprons of check dams and percolation ponds, hydrophytes like *Neerbrahmi (Bacopa monnieri), Vallarari (Centella asiatica), Vasambu* (*Acorus calamus*), *Arathai (Alphinia calcarata)* etc can be planted.

7.5.1.4:SUSTAINABLE HARVESTING OF MEDICINAL PLANTS: Information suggesting norms for sustainable levels of harvest shall be worked out by the territorial Deputy Conservator of Forests after taking into consideration the results of vegetation survey and availability of medicinal plants species and the parts of the plant or tree used for medicinal uses. Untimely harvesting should not be permitted otherwise natural regeneration will be affected. In case where the roots/tubers/rhizomes or the specific plant parts are used in medicine, the natural regeneration of these species shall be ensured by leaving well distributed and adequate numbers of seed bearers. An alternative would be to replant the area after harvest. Destructive collection should be prohibited. In some plants

whose leaves are used for medicinal purposes, it is common practice to uproot the whole plant and therefore in such cases only the leaves should be allowed to be collected. In case of vettiver, the roots alone are used in medicine. Since it is raised as a soil binder and vegetative barrier, harvesting can be taken up only when the slips establish, produce tillers and the clumps form a thick barrier. At this stage, leaving a strip of grass barrier on the uphill side tillers can be uprooted on down hill side. Similarly in case of *Cymbopogon* species leaves are to be harvested every quarter. On no account should the clumps be allowed to set fire to, to encourage tillering and development of new and young shoots. In this case if the clumps lie scattered, the harvesting will be done only once a year and that to well after the plants flower and seed dispersal has taken place.

7.6.1.1: **RESEARCH WORKS**: - There are so many nonwood forest p[produces in the forest which are unidentified and untapped. The efforts of the department should be to explore them and manage them scientifically. The identification of medicinal plants is the field to be taken for study immediately. This has wide scope in future. Dr M.N.Padhye of Nagpur and his team have been conducting a survey of medicinal plants in the forests of Gadchiroli and Chandrapur Districts. Over 150 such plants have been identified so far. This is not the exhaustive list of medicinal plants. It is open to add more names of such plants. Besides, identification and localization of the same is the field for future study. Innovation and research works should always be carried out and the same is recorded and reported properly so that those could be of use to those who come next.

7.7.1.1:GENERAL RULES TO BE FOLLOWED :- The following are the important rules

(1) The annual estimates of collection of NWFP shall be based upon the experiences. The annual estimates of collection of NWFP shall be approved by the Conservator of Forests.

(2) The Range Forest Officer of the respective range shall issue the passes for collection of NWFP to the JFM Committees or lessees and keep record of the collection etc. The minor forest produce lease units shall have distinct boundaries.

(3) NWFP collection estimates shall be based upon the inventories of forests resources.

(4) Measures shall be taken for improving yield of NWFP e.g. plantations, protection against disease etc.

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CHAPTER- VIII

WORKING PLAN FOR THE JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

SECTION: 8.1: GENERAL CONSTITUTION OF WORKING CIRCLE

8.1.1.1: National Forest Policy 1988 emphasizes the importance of the traditional rights of forest dwellers and the importance of their role in protecting the forest. Priority for the use of forest products is given to forest dwellers in respect of meeting the requirements of fuelwood, fodder, minor forest products and small timber. It also envisages creating a massive people movement with involvement of women in protection, management of forests and minimizing pressure on existing forests.

8.1.1.2 National Forest Policy, 1988 also mentions that forests should not be looked upon as a source of revenue, but as a national asset to be protected and enhanced for the well being of the teak wood and the nation.

8.11.3 As per F.A.O. (Food and Agriculture Organisation) forestry project with rural people's participation has been defined as "as set of inter connected actions and works executed primarily by local community residents to improve their own welfare: those may be outside inputs….extension, training, guidance, technical help, financing etc. - but its basic focus is on community involvement in doing something for itself."

8.1.1.4: The Government of India vide letter No 621/89-PP dated 1st June,1990 conveyed to all the State Governments, a framework for creating massive people's movement through involvement of village communities for the protection, regeneration and development of degraded forest lands. Govt of India vide Ministry of Environment and Forests, Forest Protection Division Circulars No 22-8/98-FPD dated February 11, 2000 and No22-8/2000-JFM(FPD) dated February 21, 2000 has issued detail guidelines for the Joint Forest Management Programmes to be taken up by the States.

8.1.1.5: Government of Maharashtra vide Resolution No SLF-1091/PK119/F-11 Mantralaya, Mumbai dated March 16,1992 realizing the fact that illegal felling of Forests can not be controlled and checked without the active participation and cooperation of local people in the management, protection and regeneration of forests, issued guidelines and instructions for the preparation of plans for the management of Forest areas with the active participation and cooperation of local population living in and around Forest areas.

8.1.1.6: The guidelines and instructions contained in the Government of Maharashtra Resolution dated March 16,1992 encouraged the preparation of Management plans for degraded areas in the State involving the local inhabitants from adjoining areas to Forests and seeking their participation through JFM.

8.1.1.7: The selection of areas shall be done on the basis of guidelines and instructions contained in Govt of Maharashtra Resolution dated March 16, 1992. The Deputy

Conservator of Forests, Sironcha shall take all efforts to motivate villagers to participate in the Joint Forest Management plan. The areas allotted to Joint Forest Management programmes shall be under stocked mostly open with crop density less than 0.4.

8.1.1.8: The Government of India vide its subsequent reference No 22-8/2000-JFM(FPD) dated 21/02/2000 issued further instructions to the State Government mainly related to participation of women in JFM Committees and the extension of JFM programmes to the good forest area. The GOI, in the above reference has stated that at least 50% of the members of the JFM general body should be women, and the presence of 50% of woman member is a pre requisite for holdings general body. Besides that 33% of the Executive Committee members should be women. It has further stated that the JFM activities may be extended even to good areas which were till, confined to poor areas only. According to the circular, the JFM activity in good areas is to confine to NWFP activities only, and under no circumstances, the silvicultural prescriptions should be altered. The sharing mechanism should be different, than usual and sharing of profit from timber will be only when the Committee protects the area for at least 10 years and sharing percentage not to exceed 20% of final harvest. The JFM area extending to good forests shall not exceed 100 ha and within 2 km. It further says that JFM in good area shall be on a pilot basis and should be done, only after the degraded areas have exhausted.

8.1.1.9: The tract dealt with is under severe grip of naxal activities. The people have been alienated from forest as far as participatory forest management is concerned.

8.1.1.10: Forests around the human habitation i.e. around villages are to somewhat degraded. These forests need rehabilitation to increase their productivity.

8.1.1.11: In the light of these it is being contemplated to have a Joint Forest Management (Overlapping) Working Circle.

SECTION: 8.2: GENERAL CHARACTERISTICS OF THE VEGETAION:

8.2.1.1: The forests around villages are degraded and less productive. The density is generally less than 0.4. Rooted stock is available. Heavy biotic pressures are experienced. The species are *anjanwak*, *moha*, *ain, dhaoda*, *teak* etc with no under storey. The regeneration is almost absent due to no seeding or non establishment of seedlings. Growing stock is inadequate. The soil is eroded and sometimes denuded rocks are seen. Efforts in past to rehabilitate these areas by artificial regeneration are almost failures.

SECTION: 8.3: SPECIAL OBJECTS OF MANAGEMENT:

8.3.1.1: The special objects of management have been defined keeping in view the National Forest Policy 1988 and the cost of increasing population pressure on the forest areas resulting in loss of tree over, depletion of soil and soil erosion due to demand for timber and fuelwood, grazing pressure , fires and the forest land for agriculture, industries and housing etc. In order to check further loss of forest cover and to regenerate the degraded forest areas the objects of management have been enunciated as follows:

(i) To rehabilitate and regenerate the degraded forest areas.
(ii) To check soil erosion.
(iii) To maintain an optimum level of carrying capacity in the forests.
(iv) To protect the forests and
(v) To utilize the degraded forest areas for productive purposes in order to meet the demand for fuel, fodder and timber and ultimately achieving the integrated development of the adjoining villages with the help of other development agencies.

SECTION: 8.4: SOCIO-ECONOMIC CONDITION OF THE PEOPLE:

8.4.1.1: The tract dealt with is the remotest tract of the Maharashtra State. It is on the trisection of Maharashtra, Andhra Pradesh and Chhattisgarh states. Sironcha and Aheri (part) tahsils are the revenue units. A total geographical area of the tract is 3169 square kilometer. Out of which forest area constitutes 2778 sq km amounting to 87.7% of geographical areas. Population dynamics on the basis of Socio Economic Survey published by Economic and Statistical Directorate for Gadchiroli District and pertaining to tract dealt with is as follows:

Table No-107

Taluka	Populated villages	Rith villages	Total villages	Population	ST %	SC%
Aheri	84	20	104	42000	48.2%	15%
Sironcha	114	34	148	59000	24%	24%
Division	**198**	**54**	**252**	**101000**	**36%**	**20%**

It is obvious that more than 50% population belong to Scheduled Castes and Scheduled Tribes.

Table No-108

Taluka	Cattle population	Sheep	Goat	Cattle unit	Carrying capacity	Forest Labourer
Aheri	51636	2401	28014	103264		21000
Sironcha	81099	578	17183	162198		58900
Division	**132735**	**2979**	**45197**	**265462**	**268000**	**79900**

Enough area is available for cattle for grazing. But grazing incidences are localized which result in heavy pressure on certain area resulting in their degradation. But sheep and goats cannot be permitted for grazing in forest areas. Migratory cattle have no place in the tract. Villages are not evenly distributed in the tract. They are mainly on or around river course or along the roads. Villages are mainly out of forests. Hence the pressure is certainly very much localized in pockets. It creates imbalance on forest resource utilization pattern. Hence the pressure is much felt on forests. Thus to meet the requirement of forest produces participatory approach is sought for.

SECTION: 8.5: COMPARTMENTS AND FELLING SERIES:

8.5.1.1: As the execution and implementation of the prescriptions under this Working Circle are totally dependent on the willingness of the villagers, neither the compartments

are allotted not the felling series are formed. But the list of villages which need to be tackled under this working Circle is given in the appendix no. XXII. The micro plan prepared for the area allotted to a particular village or joint forest management committee shall be in consonance with prescriptions given for that area under this plan. Any deviation from that shall be duly sanctioned by the competent authority.

SECTION: 8.6: THE PRINCIPLES AND ETHICS.

8.6.1.1: Following principles and ethics should be adhered to as guidelines during the implementation of J.F.M. in any village.

(a) Eco system conservation and sustainable use of resources is the ultimate goal of resource management.
(b) Participatory, democratic structure will enable development of strong institution in the long run.
(c) Open communication is the soul of democratic set up.
(d) Management responsibility and benefit sharing in relation to traditional usage should be ensured.
(e) Gender equity should be prime concern.
(f) Community responsibility must be infused in the system.
(g) Effective conflict resolution mechanism should be devised.
(h) Traditional rights and uses should be respected and rational approach should be followed in accepting or rejecting it.
(i) Discrete jurisdictions and explicit terms of agreements should be defined.
(j) Effective monitoring and appraisal systems should be in place.

SECTION: 8.7: METHOD OF TREATMENT:

8.7.1.1: In areas where the villagers are willing to participate in Joint Forest management plan, the concerned Deputy Conservator of Forests Sironcha shall prepare `Micro plans` for the areas to be tackled as provided in the Government of Maharashtra Resolution dated March 16, 1992 and guidelines issued by Government of India and Government of Maharashtra from time to time in this matter. The Micro Plan prepared for the particular village shall be in consonance with the prescriptions contained in Working Plan in so far as the village is concerned. The micro plan shall be sanctioned by a committee constituted by the Maharashtra Government under the Government Resolution meant for Joint Forest Management.

8.7.1.2: The execution of works and control shall be exercised strictly in accordance with the guidelines issued by the Govt of India, Ministry of Environment & Forests letter No 6-21/89-FP dated June 1, 1990 and Govt of Maharashtra Resolution NoSLF-1091/CN119/F-11 Mantralaya, Mumbai dated March 16, 1992 as also the various guidelines, circulars and Resolutions issued by the Govt of India in Govt of Maharashtra from time to time and as are applicable to the state of Maharashtra.

8.7.1.3: The micro plan and the Joint Forest Management Scheme shall be implemented through Forest Department or any other agency approved by the competent authority.

8.7.1.4: Joint Forest Management committees shall be constituted under the guidelines given by the Government in this regard from time to time. There should not be any ambiguity in terms and conditions laid down. The area allotted should be strictly shown on the map, incorporated in the memorandum of understanding. The micro plan should be prepared with active participation of the people and on scientific line and the site specific estimates should be prepared and sanctioned by the competent authority, before execution.

8.7.1.5: Activities to be taken: Following activities are to be undertaken:
(a) Effective protection of forests allotted to it.
(b) Involvement of local people in regeneration of forests.
(c) Protection of forests from fire.
(d) Protection of forests from grazing.
(e) Inhibition from encroachment upon forest land.
(f) Non-destructive collection and value addition of minor forest produces and sharing by members, as per agreement.
(g) Helping the forest officials in law enforcements and patrols.
(h) Conducting meetings timely and helping the Government official in this regard.

8.7.1.6. For protection from grazing integrated efforts should be taken to improve the quality of cattle so that the income of people enhances and concept of ownership developed. Help of Rural Development Department and allied departments should be sought. The role of forest department should be as facilitator to such schemes. For the fire protection, JFM committees should be assigned the certain fire lines and forest area to protect the forest from fire. The money meant for protection of forests from fire in the form of fire watcher and burning of the fire lines after cutting should be directly remitted to JFM committees after successful protection of the forests from fire. All legal and moral help should be provided to members protecting the forests from illegal activities. Only then forest conditions will improve.

SECTION: 8.8: ROLE OF FOREST OFFICIALS:

8.8.1.1: Role of forest official in JFM is as the facilitator.
(a) They are supposed to give technical input and support for the activities prepared under JFM for ensuring scientific forest management.
(b) They are expected to create awareness amongst the villagers about the role and benefits of forests and need to sustain the same.
(c) All matters related to duties and benefits of local people, JFMCs and staff should be specified and formalized through an agreement by the officials concerned.

8.8.1.2 Site specific, social, economic and ecological factors combine together to provide both opportunities and limitations on the type of management options that may be available in a particular area and the village. The status of regeneration and ecological viability of the forest is influenced by a range of biological conditions including species compositions, utilization history, soil and climate. Participating forest department and communities require greater institutional capacity to make collaborative forest protection activities success and final end in getting the economic returns and regenerating the forests. The efforts must yield sufficient income to sustain the management activities over

the time. Thus, forest officials have to take adequate measures in formalizing participatory forest management in a particular village or forest areas.

SECTION: 8.9: PRESENT STATUS OF J.F.M. IN SIRONCHA FOREST DIVISION.

8.9.1.1 At present Joint Forest Management is limited to 25 villages where input is made available to FDA by the Central Government. The list of FDA villages has been given in Appendix No. XXII in Volume II of this plan. Micro-Plans have been prepared and sanctioned by the competent Committee.

8.9.1.2 There are 167 villages in or around the forest. Total number of villages in the tract dealt with is 252. The division has to constitute J.F.M. committees in all villages in or around the forest and even outside the forest. Only then true forest protection will be achieved.

SECTION: 8.10: GOVERNMENT'S G.R.s AND ORDERS.

8.10.1.1 Present Government Resolutions and orders have been appended in Appendix No. XXII.

SECTION: 8.11. ACTIVE PARTICIPATION OF LOCAL PEOPLE

8.11.1.1. The local people shall be made aware of the importance of protection to the forests from fire, illicit grazing, illicit cutting and encroachment. Participation of local people shall be encouraged in protection and afforestation of forests. For this purpose, regular awareness efforts like meeting, hoarding, workshops, visit to successful areas etc shall be arranged to explain the people about the importance and benefit of regeneration and protection of forests. Village forest protection committees shall be formed and a comprehensive forest protection scheme shall be undertaken. For protection from grazing integrated efforts should be taken to improve the quality of cattle so that the income of people enhances and concept of ownership developed. Help of Rural Development Department and allied departments should sought. The role of forest department should as facilitator to such schemes. For the fire protection, JFM committees should be assigned certain fire lines and forest area for protection from fire. The money meant for protection of forests from fire in the form of fire watcher and burning of the fire lines after cutting should be directly remitted to JFM committees after successful protection of the forests from fire. It should be made obvious to committees and all legal and moral help should be provided to members protecting the forests from illegal activities. Only then forest conditions will improve.

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CHAPTER –IX

WORKING PLAN FOR WILDLIFE MANAGEMENT (OVERLAPPING) WORKING CIRCLE

SECTION 9.1: HISTORY AND WILDLIFE PROTECTION

9.1.1.1: The tract dealt with has been an ideal natural habitat for the wildlife. The forests are mainly of miscellaneous species and are dense and rich so far as varieties of species are concerned. As per records a good varieties of wild animals inhabited the tract. Even today the number is significant. But the trend is that the number of wildlife is dwindling due to many reasons. Main reason is that the pressure of human population is now more felt in the form of various forestry and non forestry activities in and around the forests. Traditionals behaviour of original forest dwellers regarding the meeting the protein requirement from the forests is to be considered major concern. Area is now naxalites infested and causing the impact on just and proper management of forests and wildlife in toto.

9.1.2.1: STATUS AND DISTRIBUTION OF WILDLIFE: The wild fauna are widely distributed in areas adjoining rivers. The wild animals commonly found in the past and comparatively less number at present in this tract are as follows:

9.1.2.2: CARNIVORE

Table No-109(a)
Showing list of wild animals
(I/J(39) Schedule/Part of Schedule / Serial Number

Sr.№	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL NO.
1	Bagh/Sher/Tiger	*Panthera tigris*	I/I, (39)
	Bibta/Panthe/Tendua	*Panthera pardus*	I/I, (16B)
3	Fox/Lomadi/Lomas	*Vulpes bengalensis*	II/II (1-B)
4	Jackal/Kolha/Siyar	*Canis aureus*	II/II (2-B)
5	Jungle cat/Ran Majar	*Felis chaus*	II/II (2-C)
6	Tadas/Lakadbagha	*Hyena hyena*	III (12)
7	Wild dog/Ran Kutra/Jungli Kutta	*Cuon alpinus*	II/I (22)
8	Wolf/Landaga/Bhendia	*Canis lupus pallipus*	I/I (13)

9.1.2.3: HERBIVORE

Table No-109(b)

Sr.№	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL NO.
1	Aswal/Bhalu/Riksha/ Bear	*Melursus ursinus*	I/I, (31C)
2	Bandar/Monkey	*Rhesus mulatta*	II/I (17A)
3	Bhekar/Barking Deer	*Muntiacus muntjak*	III (2)
4	Bison/ Gaur	*Bos gaurus*	I/I, 8E(2)
5	Chausingha/Four horned antelope	*Tetraceros quadricornis*	I/I, (8A)
6	Cheetal/Deer/Hiran	*Axis axis*	III (5)
7	Common langur/ Hanuman Bandar	*Presbytis entellus*	II/I (4A)

8	Hare/Shasha	*Lepus ruficaudatus*	IV (4)
9	Kalbit/Kalamrug/Black Buck	***Antelope cervicapra***	I/I, (2)
10	Nilgai/Blue Bull	*Boselaphus tragocamelus*	***III(14)***
11	Sambhar	*Cervus unicolor*	***III (16)***
12	Wild boar/Ran Dukar/Jungali Suar	*Sus cristatus*	***III (19)***
13	Wild Buffalo/Ran Bhains	***Bubalus bubalis***	***I/I (41)***
14	Indian Elephant (Domestic)	***Elephas maximus***	***I/I (12B)***

9.1.2.4:– RODENTS

Table No-109(c)

Sr.№	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART SERIAL NO.
1	Flying squirrel	*Petaurista petaurista*	*II/II (1-C)*
2	Giant squirrel	*Ratufa macroura*	*II/II (1-D)*
3	Mongoose	*Herpestes spp*	*II/II (16)*
4	Porcupine/Shahi	*Hystrix indica*	*IV (4E)*
5	Mice		*V (5)*
6	Rats		*V (6)*

9.1.2.5: BIRDS

Table No-109(d)

Sr.№	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SEIRIAL NO.
1	Painted Sandgrouse	*Pterocles indicus*	*IV 11 (60)*
2	Common Sandgrouse	*Pterocles exustus*	*IV 11 (60)*
3	Pea Fowl/Mayur/Mor	*Pavo cristatus*	*I/III (11)*
4	Grey Jungle Fowl/Jungli Murga	*Gallus sonneratii*	*II/II (17)*
5	Painted Partridge	*Francolinus pondicerianus*	*IV 11(51)*
6	Black breasted Quail	*Couturnix coromandelicus*	*IV 11(57)*
7	Red Spour Fowl	*Galloperdix spadicea*	*IV 11 (36-A)*
8	Crane	*Grus antigone*	*IV 11 (16)*
9	Spotted Bill Duck	*Anas poecillorhyncha*	*IV 11 (21)*
10	Pigeon	*Treron phoenicoptera*	***IV 11 (54)***
11	Dove	*Streptopelia spp*	*IV 11919)*
12	Cotton Teal	*Nettapus coromandelienus*	***IV 11 (70)***
13	*Cuckoo*	*Cuculus varius*	***IV 11(170***
14	*Snipe*	*Capella galliachges*	***IV 11 (62)***
15	Great Indian Horn Bill	*Buceros bicornis*	***I/III (4)***
16	Vultures	*Gyps indicus, Gyps bengalensis*	***I/III (21)***
17	Whistling Teal	*Dendrocygna javanica*	***I/III (7A)***
18	Woodpecker	*Picidae spp*	***IV 11 (79)***

9.1.2.5: REPTILES

Table No-109(e)

Sr.№	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL NO.
1	Crocodile/Magar	*Crocodilus porosus*	*I/II (1D)*
2	Chameleon	*Chameleo calcarats*	*II/I (24)*
3	Cobra	*Naza naza*	*II/II (11)*
4	Karait	*Elapidae spp*	*IV (12)*
5	Viper	*Vipera ruselli*	*II/II (14)*
6	Dhaman or Rat Snake	*Ptyas mucosus*	*II/II (9)*
7	Ghorpad	*Varanus griseus*	*I/II (1)*
8	Common Lizards	*Varanus spp*	*II/II (15)*
9	Pythons	*Genus python*	*I/II (14A)*

Where: Schedule means Schedule of animals as given Indian Wild Life Protection Act, 1972 and part means part of that schedule, e.g. I/II (12) means schedule I and part II of schedule I at serial number 12.
Besides these species, a large number of other animal species e.g. insects, beetle, moths, scorpions, lizards etc are found in the tract.

9.1.2.6:-The tract dealt with is situated in the interior most part of the district and away from town. Due to this the wildlife was having least disturbances. Besides, with the existence of perennial water courses in the form of main rivers and stagnant pools formed the area highly capable for supporting a variety, of wild animals and birds in the past. In present days, the tract is experiencing pressure on habitats of wildlife. Even then, wildlife is found in the tract in considerably sufficient number.

SECTION: 9.2: ABUNDANCE AND STATUS OF WILD ANIMALS IN THE PAST AND PRESENT

9.2.1.1:- The forests of Sironcha Division which are abundant in wildlife to some extent even today are mostly away from the densely populated areas. These forests are mostly inaccessible. Wild animals and birds here enjoy natural protection. Game, in the past used to be hunted under license. 10 shooting blocks were fixed in reserved forests, i.e. Somanpalli, Jhinganoor, Jimalgatta, Korepalli, Enkabanda, Sirkonda, Chitur, Bamni, Pranhita, Repanpalli. Poaching by local villagers was common. In Ex-Jamindari forests the shooting by the jamindars and by their men was common. But regularization was not at all. In past no scientific control was enforced in hunting of wild animals. License for game used to be given upto late seventies in the last century. After that no license had been issued.

9.2.1.2:- Wild animals which need special attention and protection have been enlisted in six schedules as per The Wild Life (Protection) Act, 1972. Animals, which are found in the tract, have been given in paras 9.1.2. Important species concentration is discussed below:

(1) BISON (*Bos gaurus*): Earlier Bisons were found in entire tract in the hilly region. Bisons occur in small herds in the hilly regions of Amdeli, Kopela, Somanpalli, Patagudam, Karancha, Kolamarka and Parsewada. During the summer they are frequently seen near the main rivers near Karancha, Chitweli, Somanpalli and Kopela.

(2) WILD BUFFALO (*Bubalus bubalis*):- Wild buffaloes are found in Kamalapur range in island formed in the course of Indravati River on the border of Maharashtra and Chhattisgarh States. The herd is smaller in number and is mainly migratory in nature. They migrate from Chhattisgarh to Maharashtra during summer and rainy season. They, sometimes, come to Kolamarka Forest Block of Kamalapur Range. Such a herd was cited to present author during 2004, in the month of May in Kolamarka Block near Indravati River. Exact number couldn't be ascertained as the group hastened to hide in deep forest. Six of the members were seen.

(3) TIGER (*Panthera tigris*): Tiger (Sher) was occurring in moderate number. During summer they usually remained confined to the watercourses. A few migratory ones occasionally used to enter into this tract from Bastar District of Chhattisgarh. Presently, tigers are confined to only part of the tract i.e. in Georgepetha-Parsewada tract, Karancha tract of Lakameta hill range, Amdeli tract, Kolamarka tract, Kopela tract etc. During 2002 estimation the number estimated was only four. But the figure is some what seems to be erroneous. The estimated number in the tract is certainly more than four. Evidences based on personal contact in the tract reveal the number more than one dozen.

(4) PANTHERS (*Panthera pardus*): They were less common in this tract. They were seen frequently only around the villages. Sometimes they used to enter into villages and do considerable damage to the cattle. Panthers are frequently seen round the villages Kopela and Bodela in Asarali Range, Deolmari and Lakameta tract of Pranhita range, Regulwahi area of Jimalgatta range and Kolamarka of Kamalapur range. Number of leopard is estimated to be around 15.

(5) SAMBHAR (Cervus unicolor)): They are confined in the foothills only. Sambhars are confined to the foothills near Sirkonda, Mudewahi and Amdeli of Sironcha Range; Kopela, Patagudam, Kistayapalli of Asarali Range; Karancha, Enkabanda, Motakpalli of Jimalgatta range and Korepalli block of Kamalapur range. Now- a- days sambhars are found in entire tract but in small number.

(6) CHEETAL (*Axis axis*): Cheetal are found in entire area. Herd of 25-30 animals are seen almost all forest blocks and water courses. Their number in the tract is estimated to 250-300.

(7) BLUE BULL (*Boselaphus tragocamelus:* Blue bull is found in entire tract. They are commonly seen in the forest near the human habitation. They, sometimes, causes damage to agricultural crop in the village field. They get protection due to religious beliefs of people.

(8) BARKING DEER (*Muntiacus muntjak*): They are found in entire tract. They are solitary animal. They are seen in one or tow in the tract.

(9) SLOTH BEAR (Melursus ursinus): The people are very much afraid of this animal as it attacks unprovoked. Therefore, they are still available in this tract in good number. Sloth bear is commonly found in Somnoor, Golagudam of Asarali Range, Jimalgatta and Kistapur forest of Jimalgatta range and Sirkonda, Chitur Georgepetha of Sironcha range, Lakameta Hillock of Pranhita range, Kolamarka block of Kamalapur range.

(10) WILD BOAR (*Sus scorfa*): They are very common all over the area. They are found in large herd in the entire tract.

(11) WILD DOG (*Duon alpinus*): They move over in pack and do considerable damage to the wild animals. These packs are seen moving in the forests. Present author had located a pack of wild dog in Lakameta Block near Nimalgundum in Pranhita range during March 2004. Another pack was located in Kopela tract of Asarali range during April 2004.

(12) BLACK BUCK: - Black bucks are found in Chitur Amdeli tract of Sironcha range and Ambezara Lakametta tract of Pranhita and Jimalgatta range. The number is not appreciable. They have been subjected to illegal hunting in past.

9.2.1.3. COMMON ANIMALS: - The Malabar squirrel (Scrinus *spp*), Flying squirrel, jackal (Canis aureus), Hyena (Hyena *hyena),* Porcupine (*Hystrix indica),* are common all over the tract. Langur monkey (*Presbytis entellus*), Bandar monkey (*Rhesus macaque)* are found on the fringe of forests in Sironcha range. In interior part of the tract they are not seen at all. It is said that Madia tribe is fond of monkey. Whenever a monkey is seen in their area , entire village come together and resort to tree felling in group to cordon the creature and ultimately the poor animal has to pay for tress passing in that locality.

9.2.1.4. BIRDS: - Pea fowl (*Pavo cristatus*), Grey jungle fowl (*Gallus sonneratii*) are common. Ducks are commonly found in the rivers. Titar (Francolinus pondicerianus), *Bater (Coturnix coromandelicus)*, Saras crane (*Antigone antigen*) are common in the tract. Great Indian Horn Bill is found in Kolamarka forests near Indravati river.

9.2.1.5. REPTILES: - Snakes are found all over the tract. Every year hundreds of human death occurs due to snake bite and improper medical attention. Crocodiles are found in Pranhita, Godavari and Indravati rivers near deep dohs (deeper tract of river belt). The author had opportunities to watch the basking crocodiles near Tekada in Sironcha range in Pranhita river. Many types of lizards including monitor lizards are found in tract in general.

9.2.1.6. The forest dwellers eat lizards, red ants and many other animals which are not poisonous. Earlier before introduction of Wildlife Protection Act 1972, village Patel used to do shikar and distribute the meat to the villagers. This system is now not in practice.

SECTION: 9.3: PAST MANAGEMENT OF WILDLIFE AND ITS RESULTS:

9.3.1.1: Prior to the abolition of proprietary rights in 1951, there existed no rules for the regulation of hunting in these forests and the killing of animals for pleasure as well as for the sport was common. Subsequent to the abolition of proprietary rights in 1951, the then Madhya Pradesh Government framed rules for regulating shooting in the village forests in the year 1953.

9.3.1.2: Subsequently when these forests were notified as Protected Forests under Section 29 of the Indian Forest Act, 1927, the management of wildlife came to be regulated as per the rules framed under Section32 (J) of the Act together with the prevalent rules under CP

and Berar Games Act, 1953 and the Game Block Rules as specified in Madhya Pradesh Forest Manual Volume II.

9.3.1.3: In October 1961, the Government of Maharashtra extended the Rules framed under Bombay Wild Animals and Wild Birds Protection Act of 1951 to Vidarbha region and hence it was applicable to the tract dealt with. That Act was superceded by the Wildlife (Protection) Act, 1972 which came into force from June 1, 1973 and Rules, 1975. Hunting of animals has been completely banned except for the shooting permission given to the cultivators during the harvesting season to shy away wild boars.

9.3.1.4:Vide notification dated 17.1.2003 effective from 1.4.2003 huge powers have given to law enforcing authorities and provisions for heavy penalties and punishment have been made The Wild Life (Protection) Act, 1972.

9.3.1.5: Nothing in concrete in the past had been done for wildlife conservation. In recent past salt licks are being placed at suitable places to meet the requirements of herbivore. Vantalis and Khodtalis are being taken to provide water to wildlife in the pinch period. The drive of cattle immunization was contemplated by the author. But the response from other agency and people concerned was not encouraging. The reason for this was probably abundance of forests in the surrounding, low concern for wildlife, almost no budget for this activity and lack of motivation by the forest protection staff.

SECTION: 9.4: LEGAL POSITION:

9.4.1.1: Indian Forest Act, 1878 was applicable to the tract. The section 2(b)(iii) included the wildlife in its definition of the forest produce under section 25(I) of the said Act, any person in contravention of any rules which the local Government may time to time prescribe, kills or catches elephants, hunts, shoots, fishes, poisons water or set traps or snares shall be punishable with imprisonment for a term which may extend to six months or with time not exceeding five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting court may direct to be paid

9.4.1.2: The Bombay Wild Animals and Wild Birds Protection Act, 1951, for the protection of wildlife, was extended to Vidarbha region with effect from June 1, 1961 Though this Act did not propose a significant change in the management of game in Reserved and Protected Forests, yet it was important as it operated in areas out side Reserved and Protected Forests also. Under the provision of this Act, arms license holders for sports were to register themselves with the wildlife preservation officer. This Act prescribed a closed season for hunting and classified games into four categories, viz small game, big game, special big game and pet animals. It also sought to control transaction in trophies and other wildlife products. The statutory Wildlife Advisory Board was constituted under this Act to advise the Government on various important matters concerning wildlife.

9.4.1.3:-The Indian Board of Wildlife was constituted in 1952 with the main object of devising ways and means for Conservation of wildlife through coordinated legislative and practical measures and sponsoring the resetting up of National Parks and Wildlife Sanctuaries. A comprehensive and unified National and State Park Act, 1972 was passed which provided for appointment of any Advisory Committee to advise in constitution and declaration of National Parks and Sanctuaries and formulation of administrative policy

The Parliament then enacted the wildlife (Protection) Act,1971, which came into force in the State of Maharashtra with effect from June 1,1973. From the commencement of this Act, every other Act relating to any matter, contained in this Act and in force in the State stood repealed. The subsequent rules made under the Act are as follows:

(a) The Wildlife (Stock Declaration) Rules, 1973 (became effective in Maharashtra with effect from June 1, 1973).
(b) The Wildlife (Transactions and Taxidermy) Rules, 1973 (became effective in Maharashtra wef June 1, 1973.
(c) Wildlife (Protection) Rules, 1975 (became effective from March 6, 1975).
(d) The Wildlife (Protection) Licensing (Additional matters for consideration) Rules, 1983 (became effective i.e. April 14, 1983).

9.4.1.4: The wildlife (Protection) Act, 1972 is a piece of comprehensive legislation which provides for effective protection and preservation of wildlife, restriction on hunting and regulation of trade in wild animals articles made out of wild animals. Hunting of wild animals is strictly prohibited under this Act unless it is specially permitted. Wild animals have been categorised in five schedules and animals included in schedule-I and part II of schedule-II received the privilege of strict protection. Animals specified in these schedules are permitted to be hunted only if they are threat to or cause damage to life or property, and animals in schedule-II has become as disabled or diseased as beyond recovery.

9.4.1.5: Animals specified in schedule-II (Part-I), III & IV were prohibited from hunting, except under and in accordance with specific license issued under that Act or it had become dangerous to human life or property or had become diseased or disabled beyond recovery. Only vermin included in schedule-V had been excluded from strict protection.

9.4.1.6: Hunting of young and female of any wild animals other than vermin or any deer with antlers in velvet is strictly prohibited unless specially permitted (Section-15). The Act specifically requires declaration to be furnished by the individuals as well as trophies etc in their control, custody or possession.

9.4.1.7: The Government of India, vide letter dated September 18, 1975 stated that the control over tanks and rivers in National Parks and Sanctuaries should be vested with management authorities and not with the fisheries or irrigation department.

9.4.1.8: Government of India, vide letter No 1 E-11011/3/75/FRY-9-(WLF), has clarified that the certificate of legal procurement to be issued by the Chief Wildlife Warden is not necessary where an animal is not included in any schedule of the Wildlife (Protection) Act, 1972 The export will be regulated by the Ministry of Commerce.

9.4.1.9: Subsequently, the delegation of power and duties of the Chief Wildlife Warden to the Police Sub-Inspector for the Purpose of section 41(1) and section 55 of the Wildlife (Protection) Act, 1972 was granted by Government Resolution No WLP-1973/197578-FI dated April 5, 1976.

9.4.1.10: The schedules are revised by the Government on and off as it were required under section 61 of the Wildlife (Protection) Act, 1972. The Government of Maharashtra, under section 64 of the Wildlife (Protection) Act, 1972, framed Rules vide letter NoWLP-

1679/95507/F-5. These Rules were amended further by the Wildlife (Protection), Maharashtra Rules, 1975.

9.4.1.11:- The wildlife Protection Act was again amended to be called as Wildlife (Protection) Amendment Act, 1986 and it came into force from November 25, 1986. Under Section-44 of the Wildlife) Protection) Act, 1972, the Government vide letter NoWLP/1682/100208/CR-43 (1)/F-5 permitted the trapping of cobra and Russell vipers by a licensed dealer for the purpose of extracting venom. Under the power conferred under sub section (1) and sub section (2) of the section 64, the Government of India vide letter no WLP/1682/10020(iii)/F-5 framed the new rules called Wildlife (Frog Leg Industry) Rules, 1987 and it came into force from November 25, 1987 The Government of India vide letter no F-No1-2/91/WL/1, dated October 21, 1991, further amended the Wildlife (Protection) Act, 1972 The following are the important amendments:
(1) The plants have also been included under the purview of this Act.
(2) The zoo and circus have been defined and included under this Act.
(3) The game reserves have been dropped.
(4) Section 9 of Wildlife (Protection) Act 1972 has been amended and there is a total prohibition of hunting of animals specified in schedule II III IV & I except as provided under section 11 and 12.

9.4.1.12: The following are the restrictions on hunting as per section 17 of Wildlife (Protection) Act, 1972 The following acts are prohibited, i.e.
(1) Hunting any wild animal, from or by means of a wheeled or mechanically propelled vehicle on water or land or by aircraft.
(2) Use of mechanically propelled vehicle for the purpose of driving or stampeding any wild animals.
(3) Use of chemical, explosive, pitfalls, poisons, poisoned weapons, snares or traps, except in as far as these relate to the capture of wild animals under a Wild Animals Trapping License.
(4) Hunting of special game or big game other than with a rifle, unless specially authorised by the license.
(5) Setting fire to vegetation for the purpose of hunting.
(6) Using artificial light for the purpose, of hunting except when specially authorised to do so under a license in the case of carnivore over a kill.
(7) Hunting during night, except when specially authorised.
(8) Hunting any animals on water holes or a salt-lick or other drinking places or on path or approaches to the same, except water-birds and sand-goose.
(9) Hunting any wild animal on any land not owned by Government without the consent of the owner, or his agent or lawful occupies of such claim.
(10) Hunting during closed period as per section 16.
(11) Hunting with the help of dogs, any wild animals, except water-bird, chakor, partridge or quail.

9.4.1.13: In 1991, the Government of India has passed the Wildlife (Protection) Amendment Act, 1991, which came into force with effect from October 2, 1991,except the Sections 35, 44, 55(c) , Chapter III A and Chapter IVA The salient features of this amended Act in brief are as follows;
(i) The works “game reserves, big game and small game” have been omitted from the Act.

(ii) Hunting the wild animals specified in Schedule I, II, III and IV of the Act has been banned, except as per the provisions of section 11.

(iii) A new chapter III-A has been introduced for the protection of specified plants. The specified plants have been included in a new schedule.

(iv) Section 29 of the Act has been amended and like National Parks no wildlife can be exploited or removed from a Sanctuary too. This means all concentrated felling and collection of minor forest produce from Sanctuaries would be stopped.

(v) A new section has been added in the Act to provide that no new arm licenses shall be issued within 10 km of a Sanctuary without prior concurrence of the Chief Wildlife Warden of the state.

(vi) A ban has been imposed on dealing with the imported ivory and articles made therefrom.

(vii) A new chapter, IVA has been introduced to provide for central Zoo Authority and reorganization of zoos.

(viii) The penalties for wildlife offences have been enhanced substantially Section 51 of The Wild Life (Protection) Act, 1972 has been amended from time to time and heavy penalties and punishment have been prescribed As follow: S51(1): Any person who contravenes any provisions of this Act except Chapter V-A and section 38 or any rule or order made thereunder or who commits a breach of the conditions of any license or permit granted under this Act, shall be guilty of an offence against this Act, and shall, on conviction, be punishable with imprisonment for a term which may extend to three years or with fine which may extend to twenty five thousand rupees or with both.

Provided that where the offence committed is in relation to any animal specified in Schedule I or Part II of Schedule II, or meat of any such animal or animal article, trophy, or uncured trophy derived from such animal or where offence relates to hunting in sanctuary or National Park, or altering the boundaries of sanctuary or a National Park, such offence shall be punishable with imprisonment for term which shall not be less than three years but may extend to seven years and also with fine which shall not be less than ten thousand rupees.

Provided further that in case of a second or subsequent offence of the nature mentioned in this sub section, the term of imprisonment shall not be less than three years but may extend to seven years and also with fine which shall not be less than twenty-five thousand rupees.

(ix) Section 61(I) of the Act has been amended and now the power to make any change in the schedules of the Act vests only with the Central Government.

9.1.4.14: Recent amendments to wildlife protection Act 1972 have been made for strict protection of wildlife in protected areas. The concept of Community Reserve and Protected Reserves has been forwarded to protect the wildlife out side the Protected Areas and Reserved Forests to encompass the wildlife found outside the PA or RF.

SECTION: 9. 5: RIGHTS AND CONCESSIONS:

9.5.1.1: No rights and/or privilege are granted to any person over wildlife. But a member of schedule tribes can subject to the provisions of Chapter IV of Wildlife Protection Act, pick collect or possess in the district he resides any specified plants or plant derivative thereof for his bona fide personal use. However, permits can be granted by the Chief Wildlife Warden with prior approval of the State Government for the special purposes or

education, scientific research and collection of specimen for recognized zoos, museums and similar institutions.

SECTION: 9.6: OTHER MEASURES ADOPTED FOR PROTECTING WILDLIFE:

9.6.1.1: Besides the legal provisions under the Wildlife (Protection) Act, 1972, amended from time to time and the various rules made thereunder, following measures have been taken to protect the wildlife.

9.6.1.2:Compensation is paid to the owner whose cattle are killed by a tiger in the forest areas as per the provisions contained in Government Resolution No WLP/1570/224482-X-II, dated September 30, 1971, No MSC-1075/113554/F-1, dated March 25, 1977 and No WLP/1579/6200/4/F-1, dated May 29, 1979 This provision was extended to the cattle killed by panther also and the killing by tiger or panther outside the forest areas also was included vide Government Resolution No WLP/1581/116974/F-5, dated August 22, 1984 and amended from time to time.

9.6.1.3: Provision has been made for compensation in case of death or injuries to human life by wild animals vide Government Resolution No WLP/1002/Pr.Kr. 258/F-1 dated, January17, 2003. The maximum amount of compensation in case of death is Rs 200000/- , in case of serious injury Rs 50000/- and for minor injuries Rs 7500/-. As per Government Resolution issued from time to time in case of cattle killing the amount of compensation is upto 9000 vide above GR.

9.6.1.4: In 1972, with a view to check illicit shooting of wild animals, the State Government sanctioned the grant of reward to the informants in respect of unlicensed shooting provided that the information is found to be valid and leads to the conviction of the offender. In addition, the State Government has decided to sanction the rewards equal to 50% of the compensation actually recovered from the offender for illicit shooting to the Gram Panchayat or its office bearers or individuals who render cooperation in detecting such illicit shooting. Besides, the above mentioned legal provisions for protection of wildlife, public awareness for protection and preservation of wildlife is created through the celebration of wildlife week from October 2, every year since 1951. Under the purview of the aforesaid Act, Rules, and Government Resolutions the efforts made for registering offences have been given in this plan. The details of cattle lifting, injuring or killing of human being in the tract are given in the table below. The details of compensation, given to the victim families for cattle lifting, injury or killing caused to human beings is also given in appendix no. XXV and brief are given below:

Table No-110

TABLE SHOWING THE COMPENSATION GIVEN TO THE VICTIM FAMILIES FOR CATTLE LIFTING AND INJURY OR KILLING CAUSED TO HUMAN BEINGS BY WILD LIFE:

YEAR	NO OF CASES	COMPENSATION IN Rs.
1	2	3
1993-94	19	27550
1994-95	10	21734
1995-96	8	30750

1996-97	0	0
1997-98	11	72875
1998-99	9	48900
1999-2000	6	18200
2000-01	19	36875
2001-02	81	221025
2002-03	38	123825
2003-04	18	53825
	219	**655559**

SECTION: 9.7: INJURIES TO WILDLIFE:

The following agents are mainly responsible for the destruction of wildlife in Sironcha Forest Division:

9.7.1.1:POACHING/SHIKAR: Poaching and shikar by tribals, though not recorded, is the most important reasons for destruction and depletion of the wild animals in the tract. The local tribal, particularly Madia is very fond of meat and shikar. They go for shikar resulting into the fact that not even a langoor is seen in most part of this tract now. Besides, because of spread of good network of tar roads in the past making the inaccessible areas also motorable and easily reachable to outside poachers and meat lovers, wild life has become prone to killings by outsiders heavily. It is a fact, in the past some poachers from outside the tract have damaged the wildlife to a great extent. Presently, the threat to the wild animals is not only from local Madia and other tribals of the tract but also from the anti social elements taking cover under naxalite activities. The locals move in groups of 50-60 with dogs and snares etc to hunt animals on a regular basis.

9.7.1.2: FIRE: The entire forest of the tract is prone to recurring fires annually. Sometimes remotest areas caught fire causing serious damage to wildlife and its habitat. This leads to exposure of wild animals to human habitation and thus provides opportunity to be hunted. Fire not only burns the tract vegetation but also changes the vegetal cover and its quality which is detrimental for survival of wildlife in its perpetuity. More often than not, fire is caused by local tribal hunters and outsiders to ensure clear ground for trapping and chasing animals through domesticated and trained dogs.

9.7.1.3: WATER: Most of the streams, except a few big rivers, become dry during summer. Therefore, animals have to visit only a few water bodies. This fact makes the villagers and poachers easy to kill the wild animals. But long stretch of perennial rivers along the boundaries of tract serves as heaven for wildlife. That is why; still wildlife is abundant in some parts of the tract.

SECTION: 9.8: MEASURES TO BE TAKEN TO PROTECT WILDLIFE:

9.8.1.1: Periodical estimation survey is necessary to have the distribution of wild animal's population and their distribution known to manager of the tract. Estimation will of carnivore as well as that of herbivore at a regular interval coinciding with All India Estimation of Wild life.

9.8.1.2: In summer the water availability in the interior of forests recedes leading to wild animal concentration around river and water pool. That makes these animals vulnerable for to be liquidated by greedy people. Hence, alternative to natural water resources, water is to be provided in the form of Water Holes at proper places.

9.8.1.3: Water Holes and anicuts are essential to be provided in Kolamarka Block, Lakameta Block, Edranga Block, Karancha-Ambezara tract, Sirkonda-Amdeli tract, Kopela-Jhinganoor tract, Jimalgatta-Pattigaon tract, Kodsepalli-Tonder tract. These Water Holes will be filled with water at regular basis. These water Holes will be strictly protected to eliminate the chances of poaching.

9.8.1.4: Multipurpose watch Tower will be erected at suitable places to have watch on movement of wildlife, fire control and check on grazing. The site for Watch Towers are likely to be at Nandigaon-Lakametta hill range, Hillock near Awalmari, Ambezara, near Karancha, Raspalli, Pattigaon, Kolamarka, Korepalli Block, Berarghat patch, Yedsili, Bodela, Sirkonda hill range, near Rompalli, Amdeli-Chitur tract, Wardham, Bodela nala, Kopela-Patagudam, Patagudam-Rameshgudam etc.

9.8.1.5: Herbivore needs salt to meet their requirement. At suitable places. Salt licks will be placed to meet the requirement of these animals. Identified tract for salt licks are Ambezara-Karancha-Regulwahi, Bejurpalli-Georgepetha-Mudewahi, Umanur-Yeranga-Sirkonda tract, Amdeli-Chitur-Kopela tract. Patagudam-Rameshgudam-Berarghat tract. These are broad tracts. DyCF. will make intensive survey for suitable sites for salt deficient regions and make the proper placement of salt licks on regular basis, say once in 4 months in drier period.

9.8.1.6: To be more sensitive towards wild animals, from time to time, awareness camps regarding wildlife and their importance must be organized for public as well as forest personnel.

9.8.1.7: In wildlife abundance areas like Ambezara – Lakametta hill range, meadow will be developed by clearing the tree species in 25 hectare in first phase in first year of working. Another meadow will be developed in foothill of Sirkonda hill range in Amdeli-Chitur tract in second year of working. Area should be of the order of 20 ha. In 3rd year in Kolamarka block at least one tract of 25 ha in the mist of forests and near the foot hill of hill range 20 ha open meadow shall be developed. In subsequent years if success is promising another areas will be taken for which DyCF will get sanction from CF.

9.8.1.8: For nesting of birds like Great Indian Hornbills, tall, lofty salai, bija, semal, ain trees should be identified particularly along Indravati river tract along Chhattisgarh State boundary. Author had an opportunity to have the glimpses of Great Indian Hornbill along Indravati river and sitting on dried anjan trees on the bank of the river.

9.1.8.9: Along the long stretch of roads passing through the tract, fruit trees like jamun, neem, mangos and ficus species should be planted to have shelter and fruits.

SECTION: 9.9: DOMESTIC ELEPHANT AND WILDLIFE MANAGEMENT:

9.9.1.1: In Maharashtra, the elephants are not found in wild. But in this tract domestic elephants are managed. The management of domestic elephant is somewhat wild in nature.

9.9.1.2: There is an elephant camp at Kolamarka Rith village. At present three adult, two sub adult and one elephant calf of more than one year old are in the camp. The elephants in the camp are treated as Government employees. They are given specific diet as per the direction of Veterinary Doctor. Veterinary Doctor visits the camp to check the health of these elephants at regular intervals. Captive breeding is going on as a natural process of reproduction.

9.9.1.3: Elephants are let loose during the night to have forage in Kolamarka Forests which is rich in bamboo and other species which are liked by the elephant. In morning, Mahuts search the elephant herd in the forests and bring them to camp. Chara cutters go to forests and bring the bundles of palatable leaves for elephants. In addition to that they are provided the fixed menus daily.

9.9.1.4: At elephant camp, water is provided through lifting water from well or small stream flowing near the camp. But the water made available to elephant is not sufficient for them. They need more water to drink, swim, play and enjoy.

9.9.1.5: Looking the forest and requirement of elephants, it is hereby proposed to have big water tank just like Vantali at Kolamarka itself.

SECTION: 9.10: DOMESTIC ANIMALS AND WILDLIFE MANAGEMENT:

9.10.1.1: Domestic animals and wildlife share the same common resources for their sustenance. Not only that they also share common diseases. It is very difficult to control the wildlife from contiguous diseases. It is, therefore, prescribed to have common cattle immunized from cattle diseases from time to time. Only such immunized animals should be allowed to graze in the forest.

SECTION: 9.11: JOINT FOREST MANAGEMENT AND WILDLIFE MANAGEMENT:

9.11.1.1: The environment in which wildlife does not survive is also not conducive to survival of human beings. Wild life should be focal point of Joint Forest Management. Wildlife should not be looked upon as competing in utilization of resources but as co sharer of common resources. Symbiotic relation in coexistence of human kind and wildlife is the need of hours. The fund flow for wildlife management will be shared by the Joint Forest Management Committees, if they successfully protect the wildlife and their habitat. Competition will be generated amongst the different JFM committees to be more passionate towards wildlife. Ecotourism will be encouraged to facilitate the JFM committee's members to have gainful opportunities and protection of forest resources and wildlife.

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CHAPTER X

ECOTOURISM IN THE TRACT

SECTION: 10.1: WHY ECOTOURISM?

10.1.1.1: Ecotourism is new arena in forest management of the tract. The tract has enormous potential for ecotourism. It is an overlapping working circle encompassing the entire tract dealt with. The tract is rich in flora and fauna and its variation, natural water resources, fossil tract, distinct social and cultural groups of tribals, natural landscape etc. Keeping in view the potential resources as above, it has been contemplated to have chapter on Ecotourism.

10.1.1.2: As per "Eco-Tourism in India – Policy and Guidelines, 1998", Ministry of Tourism, Government of India: Eco-Tourism can be defined as follows: **"The activities of persons travelling to and staying in places outside their usual place of residence for not more than one consecutive year for leisure, business or other purposes constitute tourism. Such visits for being close to enjoy its enormous creations, both biotic and abiotic, in most environment - friendly manner, without any adverse impact on the ecosystem, is particularly known as ecotourism."** The tract dealt with presents an ideal environment in the form of distinct vegetal covers, enchanting mountains ranges and bewitching river flows and above all unique tribal population and their distinct cultural social chores.

10.1.1.3:- According to World Tourism Organisation (WTO), "**Tourism that involves travelling to relatively undisturbed natural areas with specified object of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural aspects (both of the past or the present) found in these areas" is defined as ecotourism. Nature tourism (ecotourism) is distinguished from mass tourism or resort tourism by having a lower impact on the environment and by requiring less infrastructure development**.

10.1.1.4:-The key elements of ecotourism include a natural environment as the prime attraction, an optimum number of environment-friendly visitors, activities which do not have any serious impact on the eco system and the positive involvement of the local community in maintaining the ecological balance.

10.1.1.5:- Ecotourism can take many forms and magnitudes. For example, `losing` oneself in a beautiful natural forest or landscape-watching animals, birds and trees in forest, corals and marine life in sea engaging in trekking, boating or rafting wandering amongst sand dunes- these are some of the common forms of ecotourism.

SECTION: 10. 2: GENERAL CHARACTER OF THE VEGETATION, LANDSCAPE AND SOCIAL – CULTURAL ASPECTS:

10.2.1.1: VEGETATION: - The vegetation found in the tract dealt with is of varied nature- in respect to floristic composition and edaphic and climatic variations. (i) South Indian Moist Deciduous Forests – 3B/Cib In this category the forests of Asarali and Sironcha Ranges are included (ii) Southern Tropical Dry Deciduous Forests – 5A. In this category, the forests of Jimalgatta, Pranhita, Kamalapur and Dechali are included. Floristic composition of the area around Bejurpalli and Mudewahi of Parsewada Round in Sironcha Range show cane brakes along the water courses. This is a post climax stage in the succession relationship. The forests of Asarali and Sironcha ranges slowly merge into

3B/Clb type and said to be in the transitional stage between 3B/Clb and 5A. Even though the forests are said to be in the transitional stage, these forests represent a climax stage under the existing climatic, edaphic and biotic factors. There are local variations noticed, depending upon the nature of soil, topography and past treatment.

10.2.1.2: With respect to vegetation, the tract offers many beautiful tracts. Following are to be mentioned with pride:

(a) **Moist forests of Parsewada**: In Sironcha Forest Range, Parsewada round is boasting with distinct vegetation paradise. Though the tract experiences scorching sun during summer, the particular area in Mudewahi Beat is wet and humid with nala and rivulets filled with water. The beautiful *teak, bija, dhaoda, salai, mowai, kulu, ficus, jamun, haldu* etc trees, dense *bamboo* forests, occasional *cane brakes* and unlimited herbs and shrubs and mention not the spiraling climbers embracing and curling the trees are bound to mesmerize the on going visitors. Chirping of jungle fowl, peacock and other birds with serene voices of barking deer, prancing herds of cheetal, wandering of sambhars and nilgai to occasional fearsome presence of His Majesty the Royal Bengal Tiger to cunning leopard to dancing of sloth bear are bound to attract any body with passion to watch the nature in its abode.

(b) **Rich Forests of Kopela:** Lofty *teak, ain, anjanwak, bija, haldu* and others trees in full density in such a way that some times sun rays are deprived out to touch the feet of earth, always attracts the hearts of on goers in Kopela forest in Asarali Forest Range. Site Quality I forests adore the earth. Here one can see the man made forests and natural forests in its fullest growth. Foresters can improve their knowledge of forestry, common man can have feel of forests for what they are meant for. Occasional herd of giant *bison, nilgai, sambhars, barking deer, cheetal, jungle cat, sloth* bear, varieties of birds and prime ethnic tribe are major attractions. If fortunate enough, king of jungle can have its blessing for a while.

(c) **Varied beauty of Kolamarka:** Forests of Kolamarka in Kamalapur Range are bound to spell their magic on visitors. Migrated *wild buffalo, bison, tiger, cheetal, sambar, nilgai, bear, barking deer*, and of course the domestic elephants in wild are found in beautiful mixed forests of *teak, salai, kusum, ficus, bija, ain, hirda, beheda, Charoli, Anola, tendu*, a series of climbers and enormous herbs and un ending bamboo clumps.

(d) **Great Fall of Jitam:** Landscape of **Jitam** in Dechali Forest Range near Dechali Petha in Indravati river bordering Chhattisgarh with falling of river in serenity is amusing and to be bound by just words. Here river Indravati is in its prime. It is clad by lofty hill ranges on both sides and some what half naked in the forms of open rocks. It suddenly appears from rocks and seems dancing in its slender current. Words are not sufficient to describe the nature. Only, passionate visitors may realize the abundance of nature.

(e) **Holy Confluence of Godavari and Indravati i.e. Somnur:** Somnur is the confluence of rivers Godavari and Indravati about 10 kilometers away from Asarali. It forms the tri section of Indian States namely, Maharashtra, Andhra Pradesh and Chhattisgarh. Lord Rama might have been amused to see this pious place and might have spent his most of times during Vanvas in Dandakaranya. Still this place is so attractive that one desires to build hut here and settle for ever.

(f) **Non Challanting Lakametta Hills and Waterfall:** The jungle of Lakameta hill range in Pranhita and Jimalgatta Forest Ranges are beyond imagination. The water fall near Venkatapur village is always challenging. Even Naxalites find these areas as safe haven for their abode. Such are the dense forests and contiguous forest that one can not find human habitation after kilometers and kilometers, even 25 kilometer.

(g) **Tribals in their prime:** Ethnic *Madias, Gonds* to conglomeration of races along long trails of Pranhita and Godavari rivers valley are subject of Anthropologists. Intrinsic character of sociological-cultural variation with their tongue twisting from Telugu, Marathi, Gondi, Madia, Hindi and natural way of worshipping are of immense aspects to be closely watch and realized the variations in our composite society. Who says that India is not coherent with its variances?

SECTION: 10.3: SPECIAL OBJECTS OFMANAGEMENT:-

10.3.1.1:- Referring to National Wildlife Action Plan, 2002, special objects of management of ecotourism are spelt out. The national policy on tourism stipulates that tourism should become a unifying force nationally and internationally, fostering better understanding through travel. It should also help to preserve, retain and enrich out world-view and life-style, our cultural expressions and heritage in all its manifestations. The prosperity that tourism brings should strengthen and cause accretion, rather than damage, to our social and cultural values and depletion of our natural resources. Realisation of these policy objectives particularly in context of ecotourism would involve a selective approach, scientific planning, effective control and continuous monitoring. The developmental process itself should meet the following cardinal principles:

(1) It should involve the local community and lead to the overall economic development of the area.
(2) It should identify the likely conflicts between resource use for tourism and the livelihood of local inhabitants and attempt of minimize such conflicts.
(3) The type and scale of tourism development should be compatible with the environment and socio-cultural characteristics of the local community. and
(4) It should be planned as a part of the overall area development strategy, guided by an integrated land-use plan and associated with commensurate expansion of public services.

10.3.1.2:- Based on above cardinal guidelines, the special objects of the management are as follows:

(1) Development of ecotourism in the tract dealt with without disturbing the socio-cultural and ecological environment of the area or with low impact on it.
(2) Participation of local people in development of ecotourism and their overall socio-economic development but by maintaining ecological balance.
(3) With the help of ecotourism in the tract, to expose the ethnic groups to the mainstream of social, cultural and temporal life and involve them in harnessing potentials of ecotourism for their overall well being.
(4) To involve governmental and non governmental agencies to generate awareness for environment and the people residing in that environment and to work for their well beings with dignity.

SECTION: 4.1: WHERE TO PRACTICE ECOTOURISM IN THE TRACT?

(1) VENKATAPUR: - Venkatapur is a village in Aheri Tahsil. It is situated on the bank of river Pranhita. It is approximately 35 kilometer away from Aheri. It is linked with fair weather roads from Aheri, Jimalgatta and Parsewada. The inhabitants are mostly belonging to Scheduled castes and Scheduled tribes and are mostly backward on financial and literacy basis. People are mostly Telugu speaking with variance to Gondi and Marathi. Near Venkatapur village in Lakameta hill range a beautiful Fall is there.

Surrounding is full of natural forests. Forests in this attract one to enjoy forest trails and gentle rock climbing. River Pranhita also is nearby to give short boating adventures. Fresh water prawn are also found in the river. JFM committee Venkatapur should be encouraged to cater the need of ecotourists.

(2) ROCK TRACKING IN LAKHAMETA HILL RANGE: Lakameta hill range is in Aheri Tahsil, Pranhita Range along the Pranhita River. It starts from Kotagudam village and runs eastwardly to Repanpalli village over a stretch of 20 km. There is a natural water fall near Venkatapur village. On the plateau of the hill fort like structure exists. On the plateau, small water pool is main point of attraction. The pristine forests will amuse the on goers by its unmatching scenery. Rock climbing may be organized from time to time to bring the awareness about forests from all the four sides i.e. from Repanpalli, Karancha, Venkatapur, Watra.

(3) VISIT TO VIRGIN FOREST OF PARSEWADA-GEORGEPETHA: In Parsewada-Georgepetha tract moist deciduous to semi-evergreen forest are always source of inspirations to on goers. In this tract water is available in rivulets all over the year. Dense *teak* and miscellaneous forest, clumps of bamboos or even cane brakes are found. It is paradise for persons having botanical inclination. The tract can be visited any time all over the year. Lucky guys can have glimpses of tiger. In forests visitors can see herd of *chital, Sambhar*, *nilgai, barking deer*, Number .of birds and some times sloth bear and cunning panther may come across in tract. Forests are beautiful. One can stay in the nature by creating simple machan.

(4) VISIT TO FOSSIL AREA AND TO HAVE GLIMPSES OF CROCODILES: The tract along the bank of Pranhita River in Sironcha Tahsil is revealing Geological formations in open in the form of numerous fossils. The entire river tract is treasure for geological studies. The river boasts of crocodile. One can always finds crocodile basking in the sun on the sand bank of Pranhita along Chikela to Tekada tract. One can traverse the tract from Bamni village to Tekada while seeing fossil and crocodile on the way.

(5) VISIT TO SIRONCHA: Sironcha is the Taluka place at the South-most of the division on the confluence of holy rivers Godavari and Pranhita. On the other side of the Godavari the famous Lord Shiva temple of Kaleshwar in Andhra Pradesh is located hardly 8 km from Sironcha. Sironcha was earlier the headquarter of upper Godavari district. The Collector Bunglow presently used as Inspection Bunglow is main attraction point. One can have pure Khowa-milk-sweets and giant prawns as delicacy. It is 100 km from Allapalli well connected by road. One can also reach Sironcha from Mancherial in Andhra Pradesh which is nearest railway station 70 km west to Sironcha and connected by road.

(6) VISIT TO SOMNUR: Somnur is the trisection point of States of Maharashtra, Andhra Pradesh and Chhattisgarh, which is at the confluence of rivers Godavari and Indravati. Surrounded by hills and forest a person visiting to the side is so much amused that he wishes to stay at the confluence by making mud-hut or wooded hut. Lord Rama had visited this place in his vanvas period in Dandakaranya as being narrated by the local people. The place is 10 km. away from Asarali village, range headquarter of Asarali range and 32 km eastward to Sironcha. Nation highway is passing through Asarali.

(7) VITIS TO KOPELA-PATAGUDAM TRACT: In Asarali range natural beautiful site quality I, dense teak and miscellaneous forests filled with bamboo is of attraction to the foresters. One can see primitive tribal population along the tract. Area is good for sighting of *tiger, bison, nilgai, sambhar, cheetal* and beautiful orchids and birds.

(8) TRACKING TO SIRKONDA HILLS: Sirkonda hills lie on the north-east boundary of in Sironcha and Jimalgatta ranges. Here forest is enchanting with mighty *Hardwickia binnata* (*Anjanwak*), *Salai, Mowai, Kusum, Bamboo* forests. The population is conglomeration of ethnic Madia and migratory Telugu speaking persons. Rock climbing and jungle visit can be the attraction.

(9) VISIT TO JITAM: Jitam is the heart of Sironcha Forest Division as far as ecotourism is concerned. It is 6 km away from Dechali-Petha Village, range headquarter of Dechali Range. The place is in the lap of river Indravati on the border of Maharashtra and Chhattisgarh State. Lofty water fall and open rocks in the course of river and surrounded by beautiful forest is bound to spell the mind of visitors. The prime Madia tribe and their culture offer another opportunity to visit the area again and again. Nature lovers can have glimpses of wild buffalo, a migratory wild animal confined to the adjoining tract.

(10) KOLAMARKA FOREST: Kolamarka forest block is in Kamlapur and Dechali Ranges. The forest is very dense. The jungle is reach in flora and fauna. *Bison, wild buffalo, tiger, panther, bear, cheetal, sambar, chausingha, blue bull* etc. are found. There is an elephant camp of forest department having 6 elephants domestic in nature but wild in character. One can reach Kolamarka from Kamlapur-Repanpalli.

SECTION: 10:5: ROLE OF FOREST DEPARTMENT

10.5.1.1.: Forest Department will create ecotourism centers. Ecotourism centers should include controlled access points at Allapalli, Venkatapur, Parsewada, Sironcha, Asarali, Kopela, Sirkonda, Dechali-Petha, Kolamarka, Repanpalli and Jimalgatta. Ecotourism centers include roads; self guided nature trail, transportation options, interpretation centers, signs, observation towers and blinds, adequate but unpretentious lodging and dinning facilities, garbage disposal facility and other utilities as per the requirement.

10.5.1.2: Structures creating visual pollution, unaesthetic values and non compatible architecture, should be controlled and temporary structures using local building material and befitting the local environment should be prepared.

10.5.1.3: Specify environmental, physical and social carrying capacities to limit development activities. Ensure continuous monitoring of adverse effects of tourism and initiate suitable corrective measures.

10.5.1.4: The division will provide visitor information and interpretation services covering particularly- (i) what to see? (ii) How to see? (iii) How to behave? It will be in the form of broachers, leaflets, specialised guides, visitor information centers etc.

10.5.1.5: Division will prepare and widely distribute codes of conduct to all visitors. It will also organise training programmes for forest personnel and general public in general and JFM villagers in particulars to enhance the ecotourism.

SECTION: 10.6: CODE OF CONDUCT AND EXPECTATION FROM VISITORS

10.6.1.1: Visitors are expected to maintain some kinds of self constraints to have effective ecotourism. They are advised to abide by the guidelines prepared for them. The guidelines included are:

(i) Help conserve habitats of flora and fauna and any sites, natural or cultural, which may be affected by tourism.

(ii) Make no open fires and discourage others from doing so. If water is to be heated with scarce firewood, use as little as possible. Where feasible, use kerosene or fuel-efficient wood stove.

(iii) Remove litter, burn or bury paper, and carry back non degradable litter.
(iv) Keep local water clean and avoid using pollutants such as detergents in streams or springs. If no toilet facilities are available, try to relieve yourself at least 30 meters away from water sources and bury or cover the waste.
(v) Plants should be left to flourish in their natural environment and avoid taking away cuttings, seeds and roots.
(vi) Leave the camp sides clean after use.
(vii) Remember that another party will be using the same camp side after your departure.
(viii) Help guides and porters should follow conservation measures. Do not allow groups/porters to throw garbage in the streams or rivers.
(ix) Respect the natural and cultural heritage of the area and follow local customs.
(x) Respect local etiquette and wear loose clothes. Kissing in public is disapproved off.
(xi) Respect privacy of individuals and ask permission and use retrained in taking photographs of local inhabitant.
(xii) Respect holly places. Do not or remove religious objects.
(xiii) Strictly follow the guidelines for personal safety and security and always take your own precautions and safety measures.

SECTION: 10.7: ROLE OF NON GOVERNMENT ORGANISATIONS / SCIENTIFIC AND RESEARCH INSTITUTIONS:

10.7.1.1. Non Government Organisation / Scientific and Research Institutions are welcome to take lead in ecotourism in the tract and harness potential of ecotourism to the development of local people. It will be taken in the form of following practices:

1. Create awareness, amongst all concerned, about the importance of sound eco practices in ecotourism development.
2. Motivate the local community to increase their involvement in sustainable ecotourism activity.
3. Organise training program to prepare the local for taking up various locations relating to ecotourism easy guiding, catering, and transportation and affording housing and providing social and cultural activities etc.

SECTION: 10.8: ROLE OF COMMUNITY:

10.8.1.1. In ecotourism development the major thrust is on environment, people and ecotourists. The role of local people to develop the ecotourism as a means of eco development, enhancement of living standards of the people and to make aware the outsider about the ecological and biological diversity available in the tract. This is to be done in the form of:-

(1) Forming Joint Forest Management group with forest department and acting as efficient caterer, guide and facilitator to ecotourists.
(2) To be friendly with visitors and help them to practice ecotourism course.
(3) Realize and react to potential threat of investors who see opportunities in his development but lack sensitivity to local value.
(4) Practice conservation and nature and cultural as a way of life.
(5) Realize and respect the values of the environment, flora and fauna, the monuments and the cultural heritage.

(6) Become effective nature guides and conservationists of natural areas by enhancing the practical and ancestral knowledge of the natural features of the area.

SECTION: 10.9: THE ENVIRONMENTAL PLEDGE:

10.9.1.1. In course of promoting ecotourism in the tract following environmental pledge should be displaced at strategic places:

(1) **STATIONERY AND OTHER PUBLICITY MATERIAL ON RECYCLED PAPER:** We will introduce the use of recycled paper for our stationery and other publicity items such as broachers and establish recycling programmes.

(2) POLYTHENE BAGS: We will convert wherever possible, from use of polythene bags to paper bags, cloth bags and other alternatives.

(3) ALTERNATE SOURCE OF ENERGY FOR FUEL: Wherever possible, we will convert to solar power such as solar heating and lighting, to reduce the use of thermal electricity.

(4) GARBAGR DISPOSAL: We will introduce the system of separating recyclable and non-recyclable garbage emanating from our operations and dispose non-biodegradable garbage in a responsible way, so as to not harm the environment.

(5) WATER CATCHMENT AND TREATMENT: Whenever possible, we will recycle water by incorporating water treatment schemes. We will also make storage and catchments facilities for rain water to be used for our operations.

(6) ECO LODGES AND RESORTS: We pledge to conserve the ecology, animal and birdlife of the area, our properties are located in.

(7) PLANTING OF SAPLINGS: We will encourage the planting of saplings and greening of the local environment. We will take saplings and encourage our tourists to help plant them near our camp sites or on the trails.

(8) ALTERNATE USE OF FUELS: We will limit the burning of firewood and use alternate sources of fuel for both cooking and heating.

(9) USE OF LOCAL ETHNIC MATERIALS IN CONSTRUCTION OF PROPERTIES: In keeping with the local landscaping, we will incorporate architectural styles typical to the area, thus blending with the environment.

(10) EMPLOYMENT OF LOCAL COMMUNITIIES: Wherever possible, we will hire locally for our business, to enhance the economy of our area.

(11) LIMIT DISFORESTATION: We will make no open fires and discourage others from doing so. Wherever water is heated using scarce firewood, we will not use it or use as little of it as possible. Wherever possible, we will choose accommodation that uses kerosene or fuel-efficient firewood stoves.

(12) NON BIODEGRADABLE GARBAGE: We will leave campsites clean and take back all non-biodegradable litter to the road head towns for proper disposal. We will bury only biodegradable food waste.

(13) KEEP LOCAL WATER CLEAN: Toilet facilities will be pitched at least 30 meters away from the water source and all waste will be covered properly. We will not allow detergents to be used in streams and springs.

(14) PLANTS LEFT IN THEIR NATURAL ENVIRONMENT: We will not take away cuttings, seeds and roots of plant if not permitted to do so.

(15) RESPECT LOCAL CULTURES: We will promote the appreciation and preservation of religious places and local villages by never allowing clients to buy religious objects or heirlooms from remote villages.

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CHAPTER XI

FOREST PROTECTION IN THE TRACT

SECTION: 11.1: NEED FOR FOREST PROTECTION:

11.1.1.1: Sironcha Forest Division is geographically one of the most remote tracts of Maharashtra State. It comes under Gadchiroli District. Sironcha and Aheri (Part) are Tahsils. Pranhita, Godavari and Indravati rivers form the western, southern and eastern boundaries respectively. Andhra Pradesh State is along the western and southern boundaries. Whereas, Chhattisgarh is along the eastern border. The tract dealt with is not only remotest part but it is socially, educationally and economically the most backward areas of the Maharashtra. No infrastructures for development are established in the tract. Not only that land holding in the tract is meager as the forest itself constitutes about 88% of total geographical area. Industrial development is totally absent in the tract. Hence the per capita income is lowest in the tract with comparison to that of average for Maharashtra State. The dependence of people on forests is obviously more in the tract.

11.1.1.2: Due to proximity to Andhra Pradesh and inaccessibility of the tract to main land of Maharashtra, the tract is socially more close to Andhra Pradesh. Not only that for marketing purposes, the people prefer to nearest market places of Andhra Pradesh to that of Maharashtra.

11.1.1.3: Adjoining areas of Andhra Pradesh is devoid of t*eak* and valuable timber species. Demand for *teak* and other timber species in A.P. is day by day increasing. About 150 kilometer of boundaries of the tract is with A.P. If any how the person crosses the Pranhita or the Godavari rivers, one is other side of the State. The entire area is infested with naxalite activities. People get tacit support from Naxalites. Even police is unable to curb the naxalite activities. Under naxalite activists cover, anti social elements lure the locals of the tract to cut the *teak* and other valuable trees in the tract and bring them to other side of the State with the help of flow of river in rainy season and cart or head load in fair weather. The tract is facing acute problem of illicit cutting of valuable trees in the recent past. It can be visualised with the help of following table showing the extent of tree felling.

Table No 111
TABLE SHOWING THE ILLICIT TREE FELLING IN SIRONCHA FOREST DIVISION:

Sr №	Year	Extent of detected trees felled		Value of Trees detected felled as per schedule rates prevailing in rupees.
		Number	m^3	
1	2000	12811	3471	4,56,11,000.
2	2001	1927	299	18,94,000.
3	2002	1818	313	26,38,000.
4	2003	4447	1038	98,38,000.
5	2004	3315	833	84,85,000.
During 2000 unprecedented illicit felling of trees was reported in the tract.				

11.1.1.4: Forest official and staffs engaged in protection of the forest are facing unprecedented conditions in the tract. Many vehicles have been burnt by the Naxalites. Vehicles involved in burning include jeeps, tractors, campers, mechanized motor boat etc.

Many assaults on forest personnel have been inflicted by the anti social elements in the recent past. Not only that forest offices and residential quarters have been burnt by the Naxalites. Naxalites are advocating the eviction of forest personnel from the tract while beating the staffs and causing damages to forest properties.

Table No-112
TABLE SHOWING THE INCIDENCES OF BEATING OF STAFFS:

Year	№ of Incidences	№ of staffs affected	Area of incidences
2003	2	Forester – 1 Forest Guards – 3	Guddigudam(Pranhita) Moyabinpetha(Sironcha)
2004	3	Range Forest Officer –1 Forester – 2 Forest Guards –9 Forest Labourers -2	Wardham(Sironcha) Parsewada(Sironcha) Kamalapur(Kamalapur)
2005	2	Forester – 1 Forest Guards – 3	Wardham(Sironcha) Rangayyapalli(Sironcha)

Table No-113
TABLE SHOWING THE INCIDENCES OF BURNING OF VEHICLES:

Year	№ of Incidences	№ of vehicles affected	Area of incidences
2003	3	Jeep – 2 Tractor –1 Fire Boat- 1	Guddigudam(Pranhita) Somanpalli(Asarali) Somnur Ghat(Asarali)
2004	1	Jeep -1	Somanpalli(Asarali)

Even residential premises of Forest Staffs and interior Forest Offices had been set ablaze in the past. The list is long. These incidences demoralize the morale of Forest Personnel and casuality becomes the Forest and Environment.

11.1.2.1: Being the deciduous forests and hot temperature, the tract is vulnerable for fire. The cause of fire is mainly due to ignorance of local and wrong practices of collection of minor forest produces. The nature of fire is generally ground fire. The regeneration is badly affected due to fire incidences. Many species suffer die back in establishing the seedlings. Even, production of good fodder grasses suffers. Many herbaceous species are getting their existence in danger. Wildlife, also, suffer from the burnt of fire.

11.1.3.1: Grazing is another enemy of regeneration of forests. The carrying capacity of the tract is 268000 cattle units. The total cattle unit in the tract is 266000. If the cattle are uniformly distributed in the tract and entire forests are open for grazing all the time, then, the impact of grazing will be negligible. But the villages in the tract are mainly along the river or water bodies and hence the cattle. Also the entire forests are not remaining open for the grazing all the time. Concentration of cattle grazing is around the villages. Hence the impact of grazing around the villages is tremendous. Due to impact of grazing, fire and illicit felling, the forests around the villages are badly degraded. Forests around the villages are deprived of regeneration due to over grazing and trampling of seedlings. Seedlings seldom get established there. Hence the ground storey is completely missing around the villages.

11.1.1.4: Under the banner of naxalite activities, forests of Sironcha are facing the burnt of encroachment. The reported encroachment on forest land is given in the following table.

Table No-114
Encroachment status as reported

SrNo	Period	No. of encroachers	Area under encroachment in ha.
1	**Upto 1978**	3051	3799.400
2	**After 1978**	1246	1318.041
Total for division		4297	5117.441

But the ingression of encroachment in the forest is taking place off and on. In many cases these encroachments are not reported due to fear from Naxalites.

11.1.1.5: Poaching of wildlife in the tract is not so prominent due to Naxalites presence. But the hunting of wild animals by the local tribes is sometimes reported due to traditional value. Even traditional hunting is not so common. But stray cases of hunting of carnivore or seizure of articles/trophies of carnivore are reported in the tract.

11.1.1.6: The tract is devoid of major minerals. Hence the question of illegal mining does not arise.

SECTION: 11.2: PROTECTION FROM ILLICIT FELLING:

11.2.1.1: To protect the valuable forest from the burnt of illicit cutting of trees and to check the illegal transit of forest produces from Maharashtra through water and other routes, it becomes obligatory to Forest Department to have special efforts.

11.2.1.2: SPECIAL PROTECTION CAMPS: - As the major threat is from the outside the State. It is proposed to have Special Protection Camps at strategic points to plug the loopholes. It is hereby proposed to create special protection camps at following places:

Table No-115
TABL ESHOWING PROPOSED DITE FOR PROTECTION CAMPS

Sr №	Name of the Site	Range	Remarks
1	Deoalmari	Pranhita	It is Round Head Quarter and is on the bank of Pranhita.
2	Venkatapur	Pranhita	It is Round Head Quarter and is on the bank of Pranhita.
3	Karneli	Pranhita	It is near Pranhita river and connects the forests of Ambezara and Karancha and other areas through roads. It is near the Pranhita river.
4	Darsewada	Pranhita /Sironcha	It is on the border of Pranhita and Sironcha Ranges
5	Parsewada	Sironcha	It is Round Head Quarter. It is near the Pranhita river. It is linked with Tekada, Darsewada and Mudewahi, Georgepetha and is socially and strategically connected to

			Andhra Pradesh area on the other side of Pranhita.
6	Tekada	Sironcha	It is strategically located on the bank of Pranhita river. It is linking point to many market places on the other side of State and wonderful forest of Parsewada and Rompalli Rounds.
7	Rompalli	Sironcha	It is on the Sironcha –Allapalli road. It is at trisection of Sironcha- Allapalli And Rompalli-Jhinganoor road via Sirkonda. It is strategic point to forest of Sironcha, Asarali and Jimalgatta Forest Ranges.
8	Amaravati	Sironcha	It is on the Allapalli-Sironcha road and near the rich forests of Chitur, Sirkonda and Wardham is prone to illicit felling and encroachments.
9	Sironcha	Sironcha	It is situated at the confluence of Godavari and Pranhita rivers. It connects A.P. through National Highway No-16. A major Bridge over Pranhita is going to be constructed at Sironcha.
10	Wardham	Sironcha	It is Round Head Quarter. It is the most notorious village in the tract. People are most violent. They do not obey the law of the land. In past as well as in present, many illicit felling of trees have been reported in and around Wardham. It is on National Highway No-16 and on the bank of Godavari. On the other side river Mahadevpuram village is situated. That village is centre for timber trade. Naxalites have tacit support to illegal timber trade.
11	Asarali	Asarali	Range Head Quarter of Asarali Range is on the N.H-16. It is very near to Godavari and Indravati rivers. People in the adjoining villages are lured to indulge in illicit felling of *teak* and other timber and smuggle it to A.P. through rivers in the form of Tarafa.
12	Somanpalli	Asarali	Round Head Quarter of Somanpalli Round is on the N.H-16. It is on the bank of Indravati river. People of these villages indulge in illicit felling of *teak* and other timber in Maharashtra and Chhattisgarh forests and smuggle it to A.P. through river in the form of Tarafa i.e. rafting of timber logs.
13	Patagudam	Asarali	Patagudam is the last point of N.H-16 in Maharashtra and Situated on the bank of Indravati. On the other side it is Chhattiasgarh. It is entry/exit point to forest produces to two states.

14	Jimalgatta	Jimalgatta	It is Range Head Quarter. It is very rich in forest produces. The forests are facing encroachment problem. Illegal trade in wildlife trophies in the tract have been reported in the recent times. Illicit felling for encroachment or illegal trades is also reported. It is linked to river through Jimalgatta – Karneli road via Karancha and Indravati through Dechali Petha. These roads pass through beautiful forests.
15	Repanpalli	Pranhita	It is Head Quarter of Pranhita Range. It is on the Allapalli-Sironcha road. It is linked with Kamalapur and its forests through many roads. It is hub of naxalite activities. The tract is facing ingression of encroachment year after year. It is also facing illicit felling in its region.
16	Guddigudam	Pranhita	It is Round Head Quarter. It is entry point to Sironcha Forest from Allapalli forests. The area is facing encroachment ingression year by year.
17	Rajaram	Kamalapur	It is Round Head Quarter. The area is facing encroachment ingression year by year.
18	Dechali Petha	Dechali	It is Range Head Quarter. The area is facing encroachment ingression year by year.

Special Protection Camps shall be manned by 6 Foresters, 18 Forest Guards, 9 Forest Laborers, one four wheel vehicles and minimum one driver. At each station, a decent Barrack must be constructed for residence and civil amenities for these personnel. Cooking facilities along with rationing must be provided by the Government to facilitate the personnel so that they will be ready for rendering their services at beck and call. Along the river belt each station shall be provided with one mechanized boat to have efficient patrolling in the river flow. The mechanized boat must be driven by the trained Tandel/Khalashi.

11.2.1.3: SPECIAL CHECK POSTS/NAKAS: National Highway No-16 is passing through the tract joining two States namely Andhra Pradesh and Chhattisgarh to Maharashtra. State Highway links the tract with other part of Maharashtra. To have proper check on transit of forest produces through the tract it hereby proposed to erect check posts at strategic places. These checkpost must be duly notified by the competent authorities and published for the benefit of public and other law enforcing authorities. The strategic points identified are:

Table No-116

Sr No.	Place	Range	Site
1	Patagudam	Asarali	On N.H-16
2	Somanpalli	Asarali	On N.H-16
3	Asarali	Asarali	On N.H-16
4	Wardham	Sironcha	On N.H-16
5	Sironcha	Sironcha	On N.H-16
6	Sironcha	Sironcha	On State Highway

7	Amarawati	Sironcha	On State Highway
8	Rompalli	Sironcha	On State Highway
9	Jimalgatta	Jimalgatta	On State Highway
10	Repanpalli	Pranhita	On State Highway
11	Guddigudam	Pranhita	On State Highway
12	Karneli	Pranhita	On Aheri-Parsewada Road
13	Venkatapur	Pranhita	On Aheri-Parsewada Road
14	Deolmari	Pranhita	On Aheri-Parsewada Road
15	Parsewada	Sironcha	On Aheri-Parsewada Road
16	Rajaram	Kamalapur	On Kamalapur-Rajaram-Kodsepalli Road
17	Jhinganoor	Asarali	On Somanpalli-Jhinganoor-Sirkonda Road.

These check posts should be manned by Forest Guards and Van Majoors in rotations to have effective control. These posts must be linked with special camps with advanced technological gadgets like wireless connection or walkies talkies. Special Camps must support these check post as and when required all over the day and night.

11.2.1.4: SPECIAL MECHANISED BOATS STATIONS: As discussed in paragraph 11.2.1.3 effective check on illicit felling of trees will be enforced only when each and every loop hole in transition of forest produce are completely plugged. Not to dare the transit of forest produce through water route, it is hereby proposed have Mechanized Boat Stations at the following places in the rivers.

Table No-117

Sr No.	Place	Range	Site
1	Somanpalli	Asarali	On Indravati river
2	Somnur	Asarali	On Indravati river
3	Wardham	Sironcha	On Godavari river
4	Sironcha	Sironcha	On Pranhita/Godavari river
5	Tekada	Sironcha	On Pranhita river
6	Venkatapur	Pranhita	On Pranhita river
7	Deolmari	Pranhita	On Pranhita river

11.2.1.5: SPECIAL STATE RESERVE POLICE (SRP) CAMP: - To support the protection STATE RESERVE POLICE CAMP is prescribed to be stationed at Sironcha. Minimum one Company of SRP must be immediately provided and stationed at Sironcha. It should be directly under control of Sub DFO Sironcha stationed at Sironcha.

11.2.1.6: MOBILE SQUADS: - Deputy Conservator of Forests Sironcha Forest Division at Allapalli must have two Mobile Squads one station at Sironcha and other at Allapalli in addition to other special camps personnel. The duties of these Mobile Squads must be clearly defined. Mobile Squad at Allapalli will supervise the areas of Pranhita, Kamalapur, Dechali and Jimalgatta Forest Ranges. Mobile Squad at Sironcha will supervise the areas of Sironcha and Asarali Forest Ranges. These Mobile Squads will work directly under

Deputy Conservator of Forests, Sironcha. Deputy Conservator of Forests, Sironcha will take the help of these Mobile Squads whenever he visits the respective tract.

11.2.2.1: Not only that the Government will provide above facilities, the forest personnel will have to work in tandem to existing laws, rules and statutory orders issued by the competent authorities from time to time.

11.2.2.2: The Government vide letter No TRS 1087/102380/F-2 R & FD, dated June 18, 1981 has stated that all illicit cutting valuing Rs 25,000/- and more at place should be reported to the Government, the Chief Conservator of Forests and the Conservator of Forests by the Deputy Conservator of Forests within three days of the receipt of the report of the RFO.

11.2.2.3: The following time schedule has been prescribed for inspection of illicit cutting area by the respective officers:

Table No-118

SrNo	In situ value of illicit cutting at a place	Designation of the Inspecting Officer	Period within which inspection should be completed
1	**2**	**3**	**4**
1	Upto Rs 50000	RFO	3 days from detection/receipt of intimation of detection.
2	Above Rs 50000 but not exceeding Rs 2,00,000	ACF	3 days from the receipt of information.
3	Above Rs 200000 but not exceeding Rs 500000	Deputy CF	3 days from the receipt of information.
4	Above Rs 500000	CF	7 days from the receipt of information.

11.2.2.4 Vide letter No TRS-1082/36/F-6, dated September 8, 1982 the Government has stated that the offence above Rs 2000/- should be necessarily brought to court for prosecution, unless the prosecution is difficult to succeed.

11.2.2.5: WIRELESS NETWORK: Though the tract is naxal affected, establishment of wireless mechanism at strategic places is essential. Each Range Forest Offices, Round Offices other than Range Head Quarters, Special Camps other than Range and Round Head Quarters, each Four-wheel vehicle deployed in Forest Protection must be connected by wireless with 24 hours service basis. The base stations will have Base operators and Mobile Stations will have Mobile Stations in vehicle. Personnel will be given Hand Sets while on raids or patrolling. Effective monitoring and maintenance will be carried out by Division on priority basis. Wireless support system will be adequately manned by trained personnel.

11.2.2.6: PROVISION OF ARMS: Though it is risky in carrying arms in naxal affected areas, it is very essential to have arms in dealing with law breaking and anti social elements. Special Camps and other forest personnel must be trained in arms handling and provided Self Loading Rifles to Forest Guards, Foresters and Police personnel. Range

Forest Officers- Territorial, Mobile Squad and others engaged in common property management, Assistant Conservator of Forests, Deputy Conservator of Forests Sironcha must be provided with Service Revolver. Only then forest personnel will have deterrent effect in protection of common property resources.

11.2.3: BEAT CHECKING:

11.2.3.1: To ensure strict protection of forest, it is imperative that the protective staff vigilantly patrol the forest entrusted to their care and the officers concerned exercise effective supervision and control at all levels. It is of the essence that every forest offence is reported with the utmost promptitude whether the offender therein is apprehended or otherwise and whether the forest produce involved therein is recovered or not. As per the standing order 37, Chapter IX, instructions issued for guidance and strict compliance with a view to tighten up the measures in regard of effective protection of forests are as follows:

11.2.3.2: The primary responsibility of forest protection revolves on the protective staffs, which generally detect and report the offences. The duties and responsibilities in regard to each category of the staff are broadly specified as below:
11.2.3.3: BEAT GUARD: Every Beat Guard must patrol his beat regularly. He will thoroughly inspect the entire forest within his charge every fortnight and issue POR for all the damage detected in his beat within the first instance.

11.2.3.4: ROUND OFFICER: Each Round Officer will inspect each beat once in three months. He should verify and enumerate the damage not reported by the Beat Guard. He will submit punctually the report of each area inspected to the Deputy Conservator of Forests Sironcha at Allapalli through the concerned territorial Range Forest Officer.

11.2.3.5: RANGE FOREST OFFICER: It is the prime responsibility of the RFO to ensure that round officers and guards carry proper patrolling of the forests. He should endeavor to inspect a specific portion of the beats covering at least the $1/4^{th}$ area of the beat once in six month and report should be submitted to the Deputy CF punctually. In case of extensive illicit felling he will take prompt measure to inspect the beat thoroughly.

11.2.3.6: HIGHER OFFICERS: Higher Officers, during their tours, will inspect specific areas vulnerable to illicit felling. At least one day in a fortnight will be devoted to check the illicit fellings of trees, apart from normal inspection.

11.2.4: TRANSIT RULES FOR FOREST PRODUCE:

11.2.4.1: The transit of forest produce is regulated as per the Bombay Transit of Forest Produce Rules, 1960, which were published by the Agriculture and Forest Department under NoIFA-1057/22947-(VI)-J, dated April 23, 1960.

11.2.4.2: The Government of Maharashtra vide Notification No TRS/1083/91822 (ii) CR-87/F-6, dated May 13, 1985 has amended Section 61 of Indian Forest Act, 1927 making the law more stringent. It has authorised certain officers, Assistant Conservator of Forests and above, to be called as authorised officer for the purpose of this Act, who are competent to confiscate the vehicle, instruments, forest produces etc involved in forest offence related to the illicit removal of notified forest produces.

11.2.4.3: To facilitate the issuing of passes, the Government vide TRS/1089/PK-267/89/F-6, dated May 14, 1990 has stated that the decision regarding the issue of passes, to an applicant should be taken within 45 days of the submission.

SECTION: 11.3: FIRE PROTECTION:

11.3.1.1: The forests are valuable and need careful fire protection over the entire area. Due to fire a considerable damage is caused to the timber besides causing long range effects on the soil fertility, young crops and regeneration. The special and determined efforts are needed to enforce the proper fire discipline. For the purpose of fire protection the areas are classified as follows-

11.3.1.2: CLASS I: FORESTS COMPLETELY PROTECTED: This class includes:

(i) All plantations.
(ii) All forests of Protection Working Circle and all main felling and thinning coupes of Selection cum Improvement Working Circle, *Teak* Plantation Working Circle and Improvement Working Circle.
(iii) All regenerated coupes of all working circles till; the young crop has attained an age of 10 years.
(iv) All Government Timber Depots.
(v) Any other areas of special importance ordered by the Conservator of Forests.

11.3.1.3: All areas in this class will be isolated by means of fire lines and cut guidelines. They will be patrolled by fire watchers. Any fire incidence in these areas will be a calamity. It must be reported to Deputy Conservator of Forests Sironcha in writing giving the details of area burnt and the various types of losses occurred to the forest crop.

11.3.1.4: CLASS II: FORESTS GENERALLY PROTECTED: This class includes:

(i) The remaining areas of Improvement Working Circle and Selection-cum-Improvement Working Circle.
(ii) Such other areas as the Conservator of Forests South Chandrapur Forest Circle may for special reasons direct.
(iii) All areas in this class will be isolated from the surrounding country by means of external fire lines and will be divided into convenient blocks of interior fire lines No guidelines will be cut.
(iv) Fire watchers may be engaged for patrolling in this area if sanctioned by the Conservator of Forests.

11.3.1.5: CLASS III: FORESTS PROTECTED BY LAW ONLY: All other forests not included in the above two classes, are included in this class. In forest of this class deliberate burning is prohibited but no special measures of protection will be undertaken.

11.3.1.6: The following lines will be maintained as fire lines and will be kept clear of all growth and kept clean of combustible material during the fire season:

(i) All external Reserve Forest boundary lines to a width of 12 meters.
(ii) 6 meter wide lines around all plantations up to 10 years from the year of planting.
(iii) 3 meter wide coupe lines which from the boundary between class I areas and areas of class II and III for period of 10 years from the year of main felling.
(iv) 6 meter wide line on both sides of all roads and Cart tracks passing through the forests.

(v) 40 meter wide line on all sides of the timber, bamboo and fire wood depots.

11.3.1.7: To reduce the possibility of forest fires following should be observed:-

(i) The cutting and cleaning of fires lines should be completed by the end of December and burning should be completed before the end of February.

(ii) Dry leaves and other dry material on fire lines must be collected from time to time and deposited along the edge of the fire lines and burnt before the fire season starts. But the burning of such material on the fire lines after the hot weather has commenced, is strictly prohibited.

(iii) Except with the express order of the Deputy Conservator of Forests Sironcha, no fire lines shall be burnt after the end of February. If such permission is granted, the burning should be done in the presence of the RFO at his risk and cost.

11.3.2.1: LEGAL PROVISIONS AVAILABLE: - Under the relevant sections of Indian Forest Act, 1927, forest fire can be controlled effectively.

(i) Reserve Forests: The various legal provisions to protect the forest from fire contained in the following sections of the Indian Forest Act, 1927. The following acts are prohibited under these sections in the reserve forest areas or in areas notified under section 4 of the IFA 1927:-

Section 26(1) (b) – to set fire to a reserve forests.

Section 26(1) (c) - Kindling, keeping and carrying any fire except at such seasons as the forest officer may notify in this behalf.

Section 26 (1) (f) – burning of any tree.

Section 26 (1) (g) – Burning of lime or charcoal.

Section 26 (3) – The State Government may suspend the exercise of all rights of pasture or to forest produce in the reserve forest/protected forest or a portion there of whenever the fire is caused willfully or by gross negligence for such period as it thinks fit.

(ii) Village Forest: Section 28(3) – All the above provisions given Para 11.3.2.1 (i) for reserved forest apply in case of a village forest as they are also reserved forest.

(iii) Protected forests : Any person who commits any of the following offences under section 33(I) (a), (b), (d) and (e) namely, burns any tree reserved under section 30, burns any lime or charcoal contrary to prohibition under section 30, sets fires to such forests or kindles a fire without taking all reasonable precautions to prevent its spreading on any tree reserved under section 30 and leaves burning any fire kindled by him in the vicinity of any such tree or closed portion under section 30, shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to two thousand rupees or with both.

11.3.2.2: Provisions contained in the Maharashtra Forests (Protection of Forests from fire) Rules 1982:- The Government of Maharashtra vide Notification No1074/252 359/F6, dated February 14, 1982 under sections 32 (6) and 76(I) (d) of the IFA1927, made the rules for the protection of protected forests from fire called "The Maharashtra Forest (Protection of forest from fire), Rules 1982" The various provisions made under rules 3 to 7 are given as under:-

Rule 3:- A ban is placed on kindling of fire within a distance of one kilometer from the boundary of the forest.

Rule 4:- Under this rule any person desirous of clearing by fire any standing forest or grass land beyond a distance of one kilometer from the boundary of the forest shall

observe the following rules:- (i) He shall clear a fire belt at least 10 meter wide on the side of the area which he proposes to burn which is nearest to the boundary of the forest in such a manner that no fire can spread across such belt.(ii) He should keep a watcher to see that the fire does not spread in the forest area.

Rule 5:- Under this rule any person desirous of burning "Rab" or clearing land by burning the growth on it near the forest boundary, should inform the nearest forest officer at least one week in advance of his intention to so do. A clean belt of at least 10 m width should be left in between the boundary of the forest and the place where the rab is to be burnt so that the fire does not spread in the forest and while burning the rab, he should make such arrangements so that the fire does not spread in the forest area.

Rule 6:- Under this rule any person collecting inflammable forest produce such as grass, firewood, leaves, bamboos on land adjoining the forest land, and holder of a permit to collect such produce from the forest area, shall stock it in an open space at such reasonable distance from the forest as the Divisional Forest Officer may by general or special orders prescribed, and shall isolate the stacks in such manner that if they catch fire, the fire shall not be able to spread to the surrounding areas or endanger the forests.

Rule 7:- Under this rule all camping places along the boundary of and within the limits of the forest area will be cleared and will be set apart by the Divisional Forest Officer for the use of visitors. A list of all such camping places will be published annually and except on such camping grounds no fires shall be lighted within or along the boundary of the forest. All persons using these camping grounds shall light any fire they make for cooking or other purposes in such a way as not to endanger the forest or any buildings, sheds or other property on the camping grounds and before leaving they shall collect in the center of the camping ground all inflammable material which is to be left behind and shall carefully extinguish all fires.

Rule 8:- Rule 3 to 7 will be relaxed during the rainy season i.e. from June 15 to October 31 every year.

11.3.2.3: Provisions contained in the Bombay Forest Manual – Vol-II, Part-VI:

Rule 152:- Fire offences should not as a rule is compounded. In cases involving injury to forests by fire the provisions of s 68, IFA, should only be applied cautiously and for very special reasons ; any action which might tend to foster in the minds of an ignorant population the idea that firing of the forests, whether of set purpose or through culpable negligence, is not a serious offence, or one which in the opinion of Government calls for vigorous suppression, is manifestly to be deprecated S:68 was enacted to meet the case of petty offences, like the illicit removal of forest produce ; but cases in which considerable damage is caused by fire to reserved forests certainly do not fall within this category.

Rule 153:- Duties of Magistrates when trying offenders in forest fire case--The following instructions are laid down for the guidance of all Magistrates in the Province:-
The setting fire to a reserved forest is a very serious offence, and as such merits severe notice. It is not the actual damage caused at the time that is to be considered, but the injury caused to Government and the people in general by the destruction of the young forest growth and the consequent delay in afforesting the treeless reserves.

There is reason to believe that some Magistrates consider the offences a venial one owing to the absence of any 'intention' on the part of the offender. It is not necessary, however, under the Forest Act that intention should be proved. Carelessness in the use of fire by which a reserve is burnt is equally an offence, but in the meting out of punishment a distinction can be made if the Magistrate sees fit.
All Magistrates should be careful in dealing with such forest cases. Forest fires are unhappily but too frequent, and in most cases it is very difficult to discover their origin, but when an accused has been convicted, the above-stated considerations should not be lost sight of, and when the circumstances establish either deliberate intention or very gross carelessness and disregard of ordinary precautions, it is obvious that the punishment awarded should be adequate.

Rule 154:-Regarding findings of Magistrates in fire cases—the statistical information furnished as regards punishments awarded by the Magistracy for forest offences requires explanation. It has been pointed out by Government that the principal factor in determining the gravity of a forest offence is not the extent of damage committed but the degree of malice or culpable negligence disclosed, and it has been directed that the classification of offences of incendiarism should be based on the Magistrate's opinion. The District magistrate should pay special attention to this class of cases, call for the proceedings, and examine carefully the grounds upon which the punishments have been determined. The experiment of sending at least a proportion of cases believe to be "malicious" to First Class Magistrates, may be tried. Government trusts that in reporting results the orders of Government will be more closely followed, and that the statistics supplied will be compiled more intelligently.

Rule 157:- Continuous protection of valuable forest from fire—The success of fire protection must depend to some extent on the nature of the tract, the attitude of the people and the season. The characteristics of the system of fire protection in this Province as compared with other Provinces are a very low rate of expenditure per square mile, a high percentage of area attempted and high proportion of failure to that area. The successful protection for a term of years of a comparatively small area of valuable forest appears to the Government to be of greater importance than imperfect protection of a large area, of which perhaps only an inconsiderable portion enjoys continuous immunity for any length of time. Information on this point should be given in the annual administration reports. It should be started for each circle what area has been completely protected for seven years or more.

Rule 158:- Communal punishment for bad fires in exceptional cases—The system of communal punishment on account of bad fires in villages should be adopted in exceptional cases, and that too with the sanction of Government. Villages in which fires have been frequent of extensive should be selected and the villagers thereof assembled with a view to a formal warning being issued in the first instance by the Mamlatdar or RFO or when possible by the DFO and Sub DFO in person, to bring home to the village community as a whole its responsibility for the well-being of the forests in its vicinity. In cases where serious and repeated neglect by a village of its responsibilities is proved to the satisfaction of the DFO and the Collector, recommendations should be made to Government to enable them to inflict punishment on the village concerned in such manner as they deem fit.

Rule 159:-Duties of village officers with regard to fire protection—The principal hope of fire protection rests in the co-operation of the inhabitants of forest villages, and this co-

operation can best be secured through the authority and influence of the village headmen. It is necessary therefore that the assistance of the village headmen should be gained whether through the fear of punishment or the hope of reward. Either punishment or reward should be meted out, and speedily. If forest fires are frequent in a village, and if the Patel does not lend his personal aid, or require the villagers to assist in extinguishing them, he should be regarded as having neglected the duty incumbent upon him of protecting Government property, and should be punished under section 58 of the Watan Act III of 1874, with fine, suspension or dismissal as the case demands. If, on the other hand, he renders conspicuous service, he should receive a suitable reward in the shape of turban or silver bangle or some other gift likely to be appreciated to be publicly presented to him by the Assistant of Collector or Deputy Collector.

Rule 160:- Rewards for help in fire-protection and powers of officers to sanction them--Rewards may be granted to villagers who assist the forest department in protecting the forests from fire. The DFO concerned should submit recommendations to the sanctioning authority regarding the form of reward suitable in each case, within the budget allotment sanctioned for the purpose.

11.3.2.4: Provisions contained under the "Maharashtra Minor Forest Produce (Regulation of Trade), 1969:- In the Agent's Agreement Form made under the provisions of the above Act as per the terms and conditions No 6(xix), (xx), (xxi), (xxii) and 8, the Agents appointed by the Government for collection of tendu leaves are responsible for any damage done to the forest by their negligence and they have to observe all rules, regulations and orders for the time being in force and made and issued under the Indian Forest Act, 1927. If any damage is done to the forest (which includes fire damage it shall be assessed by the Divisional Forest Officer and his decision shall subject to an appeal to the Conservator of Forests, be final, conclusive and binding on the Agent. As per condition No XII of terms and conditions of the contract for tender for 1993, the licensee, his representatives and munshis and labourers employed by him for collecting tendu leaves shall be bound to assist in putting out any forest fire and to give information of any forest fire in their knowledge or vision to the nearest forest or police officer. The licensee will be held responsible for any fires deliberate or accidental occurring in his unit/Group of units or in its close proximity during the above period for which he will be liable for penal action.

11.3.2.5: Provisions contained in "The Maharashtra Felling of Trees (Regulation) Act, 1964:- As per section 2 (e) of the above Act burning trees on private lands is included in the definition of "Felling of trees" and such act on the part of any person without obtaining felling permission from the competent authority of the Revenue Department under section 3, is punishable under section 4 of the above Act. The punishment to be done by the competent Revenue Officer may extend upto Rs1000/- besides the tree so felled is also liable to be forfeited to the Government.

11.3.2.6:Protection of bamboo areas from fire after flowering:- The rules and regulations to be followed for protection of bamboo areas from fire by the contractors are given in the draft agreement vide Revenue and Forest Deptt No VM/D/1283/77 831/F1, dated 21-7-1983 and contained in the condition No 41(1), 41(2) and 41(3).

11.3.3. STEPS TO BE TAKEN TO CONTROL FIRE:

11.3.3.1: CUTTING AND BURNING OF FIRE LINES: The cutting of the lines will be completed by the end of December and burning will be completed before the end of February. Dry leaves and other dry material on fire lines will be collected from time to time and deposited along the edge of fire lines and burnt before the fire season starts. Except with the express permission of the Deputy Conservator of Forests Sironcha, no fire lines will be burnt after the end of February. If such permission is granted, the burning should be done in the presence of the Range Forest Officer concerned. If possible, modern fire fighting tools will be used for extinguishing the fire.

11.3.3.2: Fire Watchers:-

(i) The fire watchers will constantly patrol the fire lines in the areas assigned to them. They should keep them entirely free from the inflammable material and prevent the carrying and kindling of fire in the forest area. As soon as a forest fire occurs he should inform the concerned Beat Guard and assist him in procuring the manpower from the nearby areas and also help in extinguishing the fire. The fire watchers should not leave their areas. The watch towers will be constructed at such elevated points from where the fires even at distant places can be easily detected.

(ii) The persons involved in lighting of fires are mostly local villagers only. Therefore, it is very much essential to have an open dialogue with villagers and they should be made aware of the disastrous effect of forest fire. Repeated dialogue and persuasion can be of great help in solving the problem. Solution will be asked from them only. After doing all these things, areas vulnerable to fire will be identified around each village and for that area a gang of fire watchers of that village will be employed under Joint Forest Management. Who will have the sole responsibility of the fire protection of that area? If the village is big then a list of fire watchers will be prepared after taking meeting of villagers and having dialogue with then and rotational employment of fire watchers will be thought of. The money meant for fire protection will be directly given to Joint Forest Management Committee and that amount will be paid to fire watcher employed by that Joint Forest Management Committee.

(iii) Before the fire season starts, a scheme will be prepared in which the strategic locations will be marked on a map at which gang of fire watchers of 5 to 10 will be kept, who will supervise the area around that point and can reach the spot where fire is noticed. Daily reports from the fire watchers should be called for.

(iv) The staff associated with the fire protection work will monitor the working of fire watchers and will coordinate the working of different gangs located at different points.

(v) The available vehicles will be deployed at strategic locations which can be approached by any gang, in case of help required by them. These vehicles will help in transport of fire fighting labourers, water and other equipment required for fire fighting.

(vi) The regeneration area of Selection cum Improvement Working Circle, *Teak* Plantation Working Circle, and Improvement Working Circles will require special efforts. For this, the area will be divided into section. For each section, special efforts will be taken to protect the area from fire and grazing.

11.3.4.: FOREST FIRES:

11.3.4.1: As soon as the smoke is seen rising anywhere in or near the forest, by any Range Forest Officer or Forester or Forest Guard, he shall at once collect such aid as is immediately available and proceed in person to the spot to extinguish forest fire. If the fire is out-side his own Range, Round or Beat, he will continue there till the fire is extinguished and the concerned RFO or Forester or Forest Guard arrives on the spot. This rule will apply to all the three classes of the forests.

11.3.4.2: The utmost care should be taken to extinguish the fires and to quench the smoldering material absolutely. Filling earth over such material will be found every effective. No official shall leave the burnt locality till the senior forest officer present on the spot has ascertained and satisfied himself that no smoldering material remains. All men assisting in extinguishing fires in Government forest shall be paid according to the amount of assistance rendered.

11.3.5.1: Use of wireless : Though the area is infested with naxalism and use of wire less system is not going to be tolerated by the anti social element, a welfare state demand is that one should not be afraid of such element. A scheme will be prepared for establishing the wireless network in the whole division so that the communication becomes easier and faster. This will help not only in the fire protection works but will also be helpful in overall protection of the forest.

11.3.5: RESPONSIBILITY:-

11.3.5.1: The Range Forest Officer will be held personally responsible for the efficient fire protection in his range.

11.3.5.2: Where the forests of two ranges which are to be fire protected adjoin, the responsibility for efficient protection and clearing of common fire line will rest with one of the Range Forest Officer to be selected by the Deputy Conservator of Forests Sironcha.

11.3.5.3: In cases of common boundary between two divisions of the same circle, the above responsibility will be fixed by the Conservator on one of the Range Forest Officer. In cases of the common boundary between Sironcha and Allapalli and Sironcha and Bhamaragarh forest divisions, which are of the same South Chandrapur Forest Circle, Conservator of Forests South Chandrapur will fix the responsibility on one of the Range Forest Officer concerned.

11.3.5.4: The Deputy Conservator of Forests Sironcha will be held personally responsible for carrying out efficiently all protective and prohibitive measures (as envisaged under various acts and rules and regulations made there under) in the areas of his division.

11.3.5.5: Deputy Conservator of Forests Sironcha must satisfy himself that the exterior fire lines and other fire lines have been properly cleared and burnt thoroughly before the end of February. He must carry out inspections inquire about the implementation for the various prohibitory orders and ensure that sufficient protective staff is available to implement these orders. He must take frequent visits to the areas where the incidences of fire are common.

11.3.5.6: The Deputy Conservator of Forests Sironcha must, during his tour satisfy himself by constant enquiries and inspections that no fires in forest areas any where have gone unreported, and that the areas of reported fires have been accurately estimated. These checks require extensive and thorough personal inspection by him. A strict watch should be kept on the tendu leave contractors and their agents who engage the local people to put fire to the forest floor in order to get a good flush of tendu leaves. These fires are generally made between 1st of March and 15th of April each year.

11.3.6. FIRE REPORTS:-

11.3.6.1: The Range Forest Officer shall report the out break of a fire in his area to the Deputy Conservator of Forests Sironcha at once. Special messenger should be used if the fire extends over a large area. The Range Forest Officer must maintain a proper communication and coordination between outbreak of fire by him and further transmitting it to the Deputy Conservator of Forests Sironcha. After the fire is extinguished a detailed final report covering the area burnt and other details along with a sketch map should be submitting by the Range Forest Officer to the Deputy Conservator of Forests Sironcha within 15 days after thorough inspection of the burnt area by himself.

11.3.6.2: Deputy Conservator of Forests Sironcha will submit monthly return (in prescribed preformed Form No IX-74) to the Conservator of Forests showing therein the serial number of fire, date of occurrence, cause, area burnt, extent of damage and measures taken to extinguish fire. This report will cover:-

(i) All fires in class I areas.
(ii) All fires that have occurred in class II areas after the date given for completion for the line burning works prescribed in the previous paragraphs.
(iii) All fires that have occurred in class II areas before the date fixed for completion of line burning works. All records of fires will be shown on maps of scale 1": 2 mile and the record of fire will be filled in the concerned compartment history and the map will be attached to it. This work will be done both at the level of RFO and Deputy Conservator of Forests Sironcha.

11.3.6.3: A fire record will be maintained in the Deputy Conservator of Forests Sironcha office showing name and the length of fire lines burnt with costs. All fire lines burnt and areas especially Protected shall be indicated on the map. Incidence of fires in class I, II and III areas in each range will be serially numbered in chronological order and the details of areas burnt will be shown on the map.

11.3.6.4: Areas deliberately burnt for silvicultural reasons e.g. to destroy felling debris or to stimulate reproduction, will be excluded from the schemes of fire protection. Such fires will not be reported unless they spread into a protected area. Deliberate burning is only permissible if prescribed in the working plan or sanctioned by the Conservator of Forest. The steps to cut back the badly damaged young regeneration in the naturally and artificially regenerated areas due to fires, should be under taken by the Range Forest Officer in consultation with the Deputy Conservator of Forests Sironcha.

11.3.6.5: Financial loss due to fire will be communicated to the Accountant General as per Appendix-no XXIII

SECTION: 11.4: GRAZING CONTROL:

11.4.1.1: The success of regeneration will depend upon the effective control on grazing and protection from fire. The cattle population in the villages around the forest area is very large. Due to large population of cattle, the forests are subjected to heavy grazing. Further the cattle population is not uniformly spread over all forest areas; therefore, some areas are more vulnerable to grazing.

11.4.1.2: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-1385/132211-Y, dated 8-12-1968. Grazing will be controlled as per the prescribed grazing incidence for each class of forest in the interest of forests and pasture. As per the provisions contained in A-259 of BFM Vol II, Part VI, coupes can be closed to grazing for a period upto 10 years or more where it is difficult to get successful regeneration in shorter period.

11.4.1.3: SELECTION-CUM-IMPROVEMENT WORKING CIRCLE: As per functional classification, this working circle comprises of tree forests and the maximum incidence of grazing 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 main felling. Thus with a felling cycle of 20 years, $5/20^{th}$ or $1/4^{th}$ area will remain closed to grazing at any time after 5 years from the commencement of this plan.

11.4.1.4:IMPROVEMENT WORKING CIRCLE : This working circle comprises of minor and degraded forest and the maximum incidence of grazing prescribed for it is 0.8 ha per cattle unit. All main felling coupes will remain closed to grazing for 10 years from the year of main felling. Thus with a felling cycle of 20 years, $5/20^{th}$ or $1/4^{th}$ area will remain closed to grazing at any time after 5 years from the commencement of this plan.

11.4.1.5: All the forest are not going to be opened for grazing at a time and cattle are not uniformly distributed, it is hereby prescribed that cattle exceeding the carrying capacity of the area opened should not be allowed to enter upon the forest. The remaining cattle can be accommodated by taking the fodder development works in the community lands in these villages with the help of Joint Forest Management Committee or voluntary agencies. At the same time the villagers will be persuaded to stall feed their cattle, the grass for which will be allowed to be removed from the closed coupes. They will be made aware of the ill effects of excessive grazing on the forest growth. Besides, the staff should have dialogue with the local villagers to discuss the issue. The Deputy Conservator of Forest Sironcha should think for rotational grazing in areas which are not due for working. The experiment of silage preparation should be conducted and through this, stall feeding should be advocated. The preparation of silage will solve the problem completely. People should be motivated for rearing cattle in less number but of better breed to have better return and fewer problems.

11.4.1.6: Grazing rules made applicable vide Government of Maharashtra Revenue and Forest Department Resolution No MFP-1371/237035-Z, dated 3rd November,1973 have been given in this final draft plan in appendix no V in volume II.

SECTION: 11.5: ROLE OF JFM

11.5.1.1: Joint Forest Management committees will be used as a tool in controlling in illicit felling of trees, encroachment, fire control measures and grazing control. With constant dialogue wit JFM committees for importance of protection of forest from illicit felling, encroachment, fire and unauthorized grazing, the committee member will be allocated forest lines and area for protection of those to be carried out. The committees will be given the amount ear marked for fire protection after successful protection of the same. In such way JFM will get employment as well good will of forest department and above all the purpose of protection of forests from fire is met out. Effective involvement of people will generate environment for protection of forest from illicit tree felling, encroachment, fire and grazing.

SECTION: 11.6: CONTROL OF NAXALITE ACTIVITIES

11.6.1.1: Any administrative or managerial approach towards achieving its objects is based on the assumption that law and order condition in that area is normal. But in case of Sironcha Forest Division, the law and order condition is not normal. The tract is infested with infiltration of Naxalites from Andhra Pradesh. Local lads are also joining the hands with these Naxalites. As, with respect to total geographical area, the forest area constitutes about 88%, the impact of naxalite activities is more felt by the Forest Department. Though the major target group is Police and Revenue, the Forest is equally affected. Forest personnel cannot render their normal duties in such conditions. Hence, it is proposed to take adequate measure by the State Government to curb the naxalite activities in the tract as soon as possible. Otherwise, the forests of this tract are going to suffer to great extents and once the forest cover is lost the tract would be converted into degraded lands.

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CHAPTER – XII

OTHER IMPORTANT REGULATIONS

SECTION: 12.1: DEMARCATION OF COUPE AND REPARATION OF TREATMENT MAP:

12.1.1.1: Coupes due for main operations in a particular year of operation will be demarcated and marked one year in advance except the first year of operation in which demarcation, marking and main operation of felling will be carried out in the first year of operation of working plan. It is in the view of working of last year of main operation of working to be carried out in that particular year itself. Thus in general coupe will be demarcated one year in advance as mentioned under different working circles and a treatment map will be prepared by the RFO which will be verified by the ACF. After that a coupe demarcation certificate along with the treatment map will be furnished by the concerned RFO in the following format:

I,----------,RFO,----------certify that I have personally inspected the demarcation of coupe No----------in compartment No----------of----------FS----------WC on dated----------month ----------year----------and have prepared the treatment map as per the prescriptions of the working plan for Sironcha Forest Division.

The area of the coupe is----------ha.

Place ----

Date-----

Signature

(----------)

(Range Forest Office, --------)

Countersign

Place----- (----------)

Date --------- (Assistant Conservator of Forests, ----------)

After demarcation having been certified by the RFO, stock map and treatment map shall be prepared by the Assistant Conservator of Forests or the RFO concerned as given in the working circle. The areas distinguished for the purpose of marking, shall be delimited as per the instructions given in the text of the plan report.

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, working circle 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 breast height 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 form:-

PROFORMA FOR TREES ON THE PERIPHERY OF COUPE & GIVEN SERIAL NUMBERS:

TABLE №119 (1)

Serial Number	Species	Girth at Breast Height (cms)	Remarks.
(1)	(2)	(3)	(4)

For example, on the periphery of coupe, a teak will be given the required bands and serial number 45 in the marking register, the girth at breast height is 125 cms as follows:

TABLE №119 (2)

Serial Number	Species	Girth at Breast Height (cms)	Remarks.
(1)	(2)	(3)	(4)
45	Teak	125	**Not to be felled**

(iii) No trees bearing coupe demarcation bands will be marked for felling.

12.1.1.3: DEMARCATION OF SECTIONS:

(i) To control extraction, each coupe marked for felling in SCIWC, IWC, TPWC and Bamboo (Overlapping) Working Circles will normally be divided into four approximately equal sections. Coupe Section 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:

(i) Selected trees, on the periphery of the protection areas will be given two geru bands 15 cm apart, lower band being at gbh. In addition, a cross (X) in geru colour 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 № I will bear the Sr № I/1 and the similar trees on the periphery of protection area No II will bear the NoII/1 etc. The serially numbered trees will be recorded in the following form

Table No-120

Serial Number	Species	Girth at Breast Height (cms)	Remarks.
(1)	(2)	(3)	(4)
I/1	Ain	140	**Not to be felled**
II/1	Dhaoda	90	**Not to be felled**
III/1	Anjanwak	150	**Not to be felled**

12.1.1.4: DEMARCATION OF OTHER AREAS GIVEN IN THE TREATMENT MAP: The other categories of areas will be marked by giving one geru band and one coal tar band. The geru band will be at gbh and the coal tar band 5 cm above this. The serial number to selected trees on the periphery of such areas will be given the proforma given above and noted in register of marking of trees.

12.1.2.1: MARKING TECHNIQUE:

(i) All trees to be marked for felling will be given a geru band at gbh after removing the bark and will bear marking hammer marks at both gbh and base on a clear blaze of size: (10 cm x 10 cm).

(ii) The following trees in addition will bear digit serial №s at both gbh and base.
   (a) All trees of teak, bija, shisham, ain, tiwas, haldu, karam, dhaora and shiwan of 45 cm and over in girth at bhob.
   (b) Trees of all other species of and above 60 cm girth at gbh.

(iii) All remaining trees marked will bear serial number, which will be given by coal tar. The digital and coal tar 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 №121

Sr№		Species	Girth at bhob cm	Remarks
Digital	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 №317---------- → **3**
1
7

SECTION: 12.2: HARVESTING AND DISPOASAL OF FOREST PRODUCES:-

11.2.1.1: TIMBER AND FIREWOOD: - All coupes of main felling shall be either worked departmentally or allotted to Forest Labourers Co-operative Societies (FLCS) or as per Government policy. However all thinning coupes need to be worked only departmentally except in extraordinary conditions. All timber and firewood shall be extracted to the established Government depots or duly sanctioned depot by competent authority for sale or auction or disposal. The quantity of timber, poles and firewood to be given on nistar at concessional rates shall be kept separately in these depots.

12.2.1.2: TENDU LEAVES:-

(1) Tendu Leaves collection, processing and disposal are covered under "Maharashtra Forest Produce (Regulation of Trade) Act, 1969 (amended from time to time)." The trade in tendu leaves has been nationalised. The disposal of tendu leaves shall be done in accordance with the provisions of this Act and Government Policy in this regard.

(2) Branches below 23 cm in girth of tendu trees are permitted to be lopped. Also seedlings below 1.25 meter in height are permitted to be coppiced.
(3) Regarding, coppicing and pruning of tendu seedling or trees, research studies is too conducted to perpetuate the production of quality tendu leaves.

12.2.1.3: BAMBOO: - Bamboo shall be harvested in accordance with the prescriptions laid down for Bamboo (Overlapping) working circle. Bamboo coupes may be allotted to the lease holder or departmentally or both as per the Government policy in this regards. After harvesting the bamboo shall be brought to established Government depots or the depots sanctioned by the competent authority. The material shall be sold to Burads holding nistar privileges or other people for the same at concessional rates. Remaining bamboos shall be disposed of as per the prevailing Government policy. In the area where bamboo is available for harvesting but not included in Bamboo (overlapping) working circle, Dy C.F Sironcha will prepare a scheme get it sanctioned by Conservator of Forests and endorsed to Working Plan Officer.

12.2.1.4: GRASSES: - Disposal of grasses from closed coupes shall be done as per the instructions contained in the Panchayat Raj Extension to the Schedule Areas and ownership to the minor forest produces to Panchayat Raj Institutions. Also, the involvement of Joint Forest committees in protection of forests and utilisations of intermediary forest produces for their benefits to be adhered.

12.2.1.5: GUMS: - Gums also comes under the purview of minor forest produces. Their collection and disposal should be on the line of the spirit of the Extension of Panchayat Raj to Scheduled Areas Act and or as per the understanding for JFM.

12.2.1.6:- HONEY, WAX, BROMM GRASS: - These items are under minor forest produces and are covered under the ownership to Panchayat Raj Institutions. Hence shall be disposed of as per the letter and spirit of that Act or as per the Joint Forest Management Committees involvement to protect the forests or on the norms prevailing time to time fixed by the competent authority.

12.2.1.7:-ALL OTHER MINOR FOREST PRODUCES: - The remaining minor forest produces shall also be collected and disposed of as per the existing Government Policy in that regards.

12.2.1.8:- GENERAL:- Sound and young growth of all important species yielding minor forest produces or medicinal plants such as *Mahua, Charoli, Hirda, Beheda, Aonla, Tendu leaves & fruits, Satawari, Kambarmodi, Safed Musli, Sarpgandha* etc should be retained in areas earmarked for harvesting in such a manner that they are suitably dispersed and would also serve as subsidiary crop to main species and would constitute a source of availability of minor forest produce to people residing in or around the forests and remain as gene pool for posterity.

SECTION: 12.3: IRREGULAR HARVESTING:

Irregular harvesting of timber, firewood and other minor forest produce is prohibited, except in the following cases:

12.3.1.1: Removal of dead fallen timber and firewood and trees uprooted by wind or storm from all parts of the forests, except the coupes due for working, will be done in the following manner. Every year in the month of October each Beat Forest Guard shall report compartment wise the availability of dead fallen firewood and trees uprooted by wind or storm to the concerned RFO. The RFO will then prepare compartment wise estimates for such material by marking these trees. Marking in a compartment will be done only if the number of such trees is more than 2 per ha as this much number will be required to be left in the forest to decay in order to benefit the wildlife in the forest. After the approval of estimates by the Deputy Conservator of Forests, harvesting will be done and the material will be taken out of the compartments. This material may be given to the Gram Panchayats or Forest Protection Committees at concessional rates approved by the Conservator of Forests or disposed of as per the existing Government Policy regarding this. Further distribution will be done by the Gram Panchayat or Committees under the supervision of the concerned RFO. Where there is no demand for this material, it will be brought to the sale depot and sold in open auction. The details of material obtained from each compartment, number of beneficiaries and revenue realised from it will be entered in the respective compartment history form.

12.3.1.2: Approval of felling of trees on the fire lines will be given by the Deputy Conservator of Forests, with reference to the Conservator of Forests regarding the approval of fire line and its category for which the Conservator of Forests is to decide whether the fire line is to be maintained or not.

12.3.1.3: Approval of felling of trees under electric and telephone lines existing prior to coming in force of Forest Conservation Act, 1980 or after that may be given by the Deputy Conservator of Forests, as per the sanctioned accorded by the competent authority.

12.3.1.4: Felling of trees on forest land required by the other departments such as Irrigation, PWD etc for other than Forestry Purposes will only be undertaken after the proposals for the use of forest land for non-forestry purposes are approved by the Government of Indian under the provisions of Forest Conservation Act, 1980. The material obtained from such harvesting will be brought to the depots and will be disposed of along with regular coupe material.

12.3.1.5 The disposal of forest produce obtained from submergence areas of dams and tanks, from construction of roads etc will be carried out according to the orders, issued by the competent authority, in writing, in case of sanctioned projects.

12.3.1.6: No irregular harvesting for the purpose of undertaking plantations / afforestation work under schemes outside the scope of this working plan will be taken up in any of the areas under this working plan.

12.3.1.7: The felling of trees for the purpose of growth study, preparation of volume table or yield table to be carried out by the working plan division will need no permission from Central Government, except giving the details of the plan of work to the territorial Conservator of Forests well in advance getting sanction from him. Felling should be strictly as per the objects of the work.

12.3.1.8: Removal of dead trees- Very often due to insect or fungus attack there is a large scale mortality of pole and tree crops. Removal of such dead trees/pole crops shall be permitted as part of irregular harvesting.

12.3.1.9: Removal of High stumps – The high stumps left over by the illicit removers shall be cut and flushed to the ground. The timber will be harvested but before harvesting an inventory of such high stumps duly verified by ACF shall be prepared.

12.3.1.10: Removal of dangerous trees – The trees leaning dangerously on the road or on the public or private property likely to cause injurious damage can be removed and shall constitute an irregular harvesting.

SECTION: 12.4:- MAINTENANCE OF BOUNDARIES:

12.4.1.1: In general the present state of forest boundaries and their maintenance is unsatisfactory in newly declared RF and PF. This work is not being given due attention and the boundary marks are in a neglected state. The state of maintenance of boundary lines of other Reserved Forests is very poor. Under the Survey and Demarcation Scheme, the ex-proprietary Protected Forests were surveyed and demarcated but the boundaries were not maintained subsequently. At present these boundary marks do not exist on the ground. At many places forests areas have been encroached. It is, thus, necessary that the whole area should be surveyed and demarcated without loss of time. Accurate maps shall be prepared. Major parts of these protected forests areas have been declared, as Reserved Forests vide Notification No FLD 3685/9316/CR-42/F-3, dated 5.5.1992. Therefore, the Deputy Conservator of Forests, Sironcha shall prepare a special scheme for five years to demarcate these areas. He shall prepare the map showing the boundary pillar. One map should be supplied to the Conservator of Forests, Working Plan, Chandrapur-2 for his record and for showing the pillar numbers on the master set maintained in his office. This work should be taken up without loss of time as early as possible, latest in very first year of the implementation of this working plan. Besides, the compartment boundaries of these newly created RF by 3 meters wide clear line should be made and maintained by cutting under growth regularly. The external boundary demarcation of the forests must be done by RCC cairns of approved designs. The Principal Chief Conservator of Forests MS Nagpur vide his office letter प्रमुवस/भु.अ./६८/२०००—२००१ नागपुर दिनांक २९—५—२००१, has circulated to all Chief Conservator of Forests/ Conservator of Forests (Territorial) in the State the design of the RCC pillars for the survey and demarcation of the forest lands in order to observe the uniformity of the boundary pillars in the state. The design of the RCC pillars shall be as approved by the office of PCCF.

12.4.1.2: Similarly, remaining Protected Forests also need be surveyed and demarcated on the ground so as to distinguish it from the revenue land. A special scheme should be prepared and the Deputy Conservator of Forests, Sironcha Division should launch a special program for immediate survey and demarcation of these areas. He shall take drive for preparation of accurate maps for the same. This work can be done simultaneously while doing survey and demarcation of Reserved Forests.

12.4.1.3: Boundary survey and demarcation should be done very meticulously. As special programmes should be launched by the Deputy Conservator of Forests, Sironcha Division for survey, demarcation and preparation of accurate maps. Survey of forests shall be as per the notifications issued for the same from time to time.

12.4.1.4: The external and internal boundaries of the forest will be maintained according to 1/5 boundary demarcation and verification scheme. The boundaries of the forest will be maintained as given below:

(1) The width of the cleared area of the outer boundary of the Government forest will be 12 meters. 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 line will not be cut down so long as they do not obscure the view of the boundary marks one from the other except, where natural features form the boundary, demarcation will be done by cairns.

(2) The specification about shape, descriptions, foundation, dimension, colour wash etc of boundary marks are given in the Principal Chief Conservator of Forest's letter dated 29/5/2001. The boundary marks (cairns) will be placed at visible distance one from the other, so that from any mark it's neighboring 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 500 meters. Each cairn will bear a serial number, a fresh series being given for each adjoining village.

12.4.1.5: BOUNDARY MARKS SPECIFICATION:

(i) The specifications of boundary shall be as approved by the PCCF MS.

(ii) In addition to the boundary marks, tin plates will be fixed on the boundary trees at a height of 3m, 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 of size 45 cms x 45 cms. They will be painted white and compartment number and boundary pillar number will be written in red.

12.4.1.6: 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 repairs to the cairn are done and the wooden post is replaced where necessary.

(iv) That the boundary posts bear the correct number and the same is engraved and written with coal tar or paint.

(v) That there are no encroachments. If there are any encroachments or are suspected, the matter should be pursued and the encroachments got removed.

12.4.1.7: RULES FOR INSPECTION AND MAINTENANCE OF FOREST BOUNDARY MARKS:

(1) The forest guard of the beats will be responsible for the maintenance and protection of all the boundary marks in the forests of his beat. He himself will colour wash them annually after rains and will make a special report of having preformed this work. Each forest boundary mark in his beat will be specially inspected by the beat guard at least once every year. A record of his inspection will be entered in his diary and sent to RFO.

(2) The Round Officer will be responsible for the maintenance and protection of all the boundary marks in the forests of his round. He will see that they are maintained properly, repaired and colour washed by the 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 the boundary demarcation scheme. A mention of this will be made by him in his diaries. The Round Officer will annually submit to the Range Forest Officer a certificate in the following form :-

"I, ----------, Round officer, ---------- certify that the annual length of boundary lines in my jurisdiction as prescribed under the scheme given in Appendix no XXIII of the working plan for the forests of Sironcha division has been verified by me 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 cairn on either side of a cairn is visible and they are in proper condition and bear correct serial number. There are no encroachments or encroachments are as detailed below: - ---------- ----------".

Signature.
(Name:).
(Designation:).

(3) The Range Forest Officer will check at least 25% of the annual boundary line as per the 5 year program and 5% verification will be carried out by the ACF.

12.5.1.8: MAINTENANCE OF COMPARTMENT BOUNDARIES: 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.

12.4.1.9: 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. This legal provision should be made use of at all levels by the field staff. Strict watch will be kept on the persons who do so and they should be booked under the above provisions contained in IFA, 1927.

12.4.1.10: Area register shall be maintained in the office of the Deputy Conservator of Forests Sironcha and shall be updated every year after execution of survey and demarcation works described as above.

12.4.1.11: The Deputy Conservator of Forests Sironcha shall supply a copy of the corrected maps and area register to the Conservator of Forests, Working Plan Chandrapur-2 every year in the month of June. The Deputy Conservator of Forests Sironcha shall take all preventive steps and legal steps to prevent illegal actions. The Deputy Conservator of Forests Sironcha shall be bound by law to prevent encroachment of Forest areas.

SECTION: 12.5: ARTIFICIAL REGENERATION:

12.5.1: PLANTING OF TEAK AND MISCELLANEOUS SPECIES:

12.5.1.1: In the areas suitable for planting teak and miscellaneous species, planting will be done in the year following the year of main felling. Teak will be planted through stumps and miscellaneous species will be planted through polythene bag plants. The details of various works will be as follows:-

12.5.1.2: PREMONSOON WORKS: They will be carried out in the year of main felling along with the felling. They will include following works.

12.5.1.3: FENCING : The whole coupe if 70% area is to the planted, otherwise compartment will be taken for fencing TCM of standard cross section of 1.90 m x 0.60 m x 1.0 m will be dug where the boundary runs along the contour. No TCM will be dug when the boundary of the coupe runs across the contour or inside the compartment. In that case, live-hedge fencing will be taken. Live hedge fencing will consist of two outer rows of agaves 50 cm apart and 3 inner rows, 50 cm apart, on which sowing of seeds of fast growing thorny trees like *Acacia Senegal*, babul etc and planting of cutting of shrubs like Vitex, Dodonea etc will be done after the monsoon.

12.5.1.4: PIT DIGGING: For planting of miscellaneous species pits of size 30 cm x 30 cm x 30 cm will be dug. The dug up soil will be kept on the upper side of the slope. The pit digging will be completed upto March and the soil will be allowed to weather during summer. Pit filling will be done at the end of May. The number of plants of teak and miscellaneous species will be 2500/ha.

12.5.1.5: NURSERY:

(i) TEAK: Teak stumps will be prepared from one year old seedlings raised in the beds as per standard nursery technique. The source of seed must be from known source and certified by the competent authority. The stumps should not be below thumb thickness.

(ii) MISCELLANEOUS PLANTS: The miscellaneous plants will be raised in the polythene bags. The standard size of the polybag plants suitable for planting will be when the collar of the plant is approximately thumb thick and is woody in appearance. The height of the plants will vary from species to species. To achieve the optimum sized polybag plants, the nursery work will be started latest by October in the previous year of planting. The polythene bags will be sifted every 15 days, once the height of plants reaches ten cm. Care will be taken that each bag contains only one seedling. During the shifting the bags will be arranged in descending order of plant heights. Suitable fertilizer and manure will be given to the plants at regular intervals. Before planting, the planting stock will be examined by an ACF and he will certify the suitability of the planting stock.

12.5.1.6:FIRST YEAR OPERATIONS : As soon as the monsoon starts, seed sowing in 3 rows for live hedge fencing, described earlier, will be done by raking the soil along the line 10 cm deep. Planting of agave on the outer two rows of live hedge fencing at a spacing of 50 cm and planting of shrub cutting on the inner 3 rows, will be done. Teak stump planting in crow bar holes and polybag planting in pits will also be done along with the planting on live hedge. The polythene bags will be planted in such a manner that their collars are at the ground level and it will be covered with soil upto a height of 5 cm above collar. All these operations will be completed in not more than 15 days after the break of monsoon.

12.5.1.7: SUBSEQUENT OPERATIONS: Immediately after the completion of planting, first weeding will be started. Casualty replacement will be done along with the first weeding. Second and third weeding will be done in the month of September and October respectively. The last weeding will include soil working and mulching to reduce the evaporation losses. One more soil working may be done in the month of January, if there

are Winter rains, subject to the availability of funds. Weeding and soil working to the seedlings on live hedge will also be done in order to enhance their growth and survival.

12.5.1.8: In the second year of plantation, casualty replacement will be completed soon after the start of monsoon. Two weeding will be carried out in the month of August and October respectively. Soil mulching will be carried out at the time of second weeding Debudding of teak plants will be one in the month of April/May.

12.5.1.9: In the third year one weeding with soil mulching will be carried out in the month of September. Debudding will be done as in second year.

12.5.2. BAMBOO PLANTING:

12.5.2.1: Bamboo will be planted, at a spacing of 5m x 5m, in the fourth year from the year of main felling if prescribed for it. The details of various works will be as follows:
12.5.2.2:PREMONSOON WORKS : They will be taken in the third year from the year of main felling Pits of size 45 cm x 45 cm x 45 cm will be dug before March. The dug up soil will be kept on the upper side of the slope. The pits will be filled in the following year before the onset of monsoon.

12.5.2.3: NURSERY: Two years old bamboo seedlings with well developed rhizomes will be used for planting. The best method for preparing the good seedlings will be by establishing rhizomes bank at suitable sites in each range. Bamboo seeds from known source will be sown in beds of size 12 m x 12 m x 03 m, two years in advance of planting. In the month of February and March of the year of planting, the seedlings from the beds will be transplanted into polythene bags after cutting their branches above 3 to 4 nodes. They will sprout within 15 to 20 days. After sprouting, suitable fertilizers will be given to get the vigorous growth

12.5.2.4: FIRST YEAR OPERATION: At the onset of the monsoon, the polypots seedlings will be transported to the planting site and will be planted in pits At the time of planting, suitable fertilizers and insecticides will be given to each plant in the pits Casualty replacement will be done at the end of July or in the first weed of August, Three weeding and soil working will be done

12.5.2.5: SUBSEQUENT OPERATIONS : Casualty replacement and two weeding with soil working will be done in the second year One weeding and soil working will be done in the third year Insecticides will be used if there is termite attack

SECTION :12.6 : SOIL AND MOISTURE CONSERVATION WORKS :

12.6.1.1: With the increase in biotic interference in the forest areas, the forests are becoming degraded. The annual fires are enhancing this process. As a result of this, the forest floor is becoming compact and is being exposed to sun and rain, thus becoming vulnerable to erosion. The areas adjoining to human habitation, especially the protected forests, have become devoid of vegetation by way of illicit cutting, heavy grazing and repeated fire. Th soil erosion has increased in these areas. In the worked coupes also soil conservation works are, generally, not taken. This also makes them vulnerable to erosion The intensity of rainfall varies. The greater intensity of rainfall increases the run off from the forest floor. The rain water washes off along with it the exposed top layer of the soil.

The compaction of soil reduces percolation and water holding capacity of the soil. This decreases the sub-soil water level. Extensive silvicultural works have been prescribed in this working plan. In order to ensure the success of these works in improving the forest, soil and moisture conservation works are of prime importance. Unless they are taken, the quality of the forest can not be improved in long run. They will include two main operations namely, contour trenching and nala bunding/check dams.

12.6.1.2:CONTOUR TRENCHING : If necessary and certified by Deputy Conservator of Sironcha, continuous contour trenches will betaken all over the coupe, due for working, where the density is below 0.4. In areas above 25 degree slope trenches will be dug in accessible area only. The cross section of the trenches will be 45 cm x 30 cm. The soil from the trenches will be heaped on the lower side of the trenches. The boulders from the trenches will also be neatly stacked on the lower side. Grass tussocks planting, sowing of seeds of grasses and local tree and shrub species and planting of cuttings of Vitex, Dodonea, ipomea and bulbils of agave will be done on the heaps of the soil for its stabilisation. The contour interval between the consecutive trenches will be 15 m. Depending upon the slope, the distance between the two consecutive trenches will vary. In order to bring the uniformity in working the distance between consecutive trenches is given in Table below:

12.6.1.3: However, the actual spacing is to be determined after getting treatment map and doing the following calculations

If a = Average annual rainfall in mm in a year
b = Rainy days in a year
c = $\frac{a}{b}$, the average rainfall per rainy day in mm

then d = 10 c, is the rain fall in cubic meter/rainy day/hectare.

For the trench of size = 0.6x0.3 = 0.18 m^3, the length of trench in meter per hectare required to absorb water pouring per rainy day per hectare completely can be calculated as follows :

L = d/018 in m. and accordingly the distance between two consecutive lines can be determined. Taking an example of one hectare the distance between consecutive trenches come to 10,000/L in meter

Table No-122

Slope in degree	Distance between consecutive trenches
Upto 15	8 m
15 to 25	5 m
Above 25	3 m

12.6.1.4: The trenches near the nalas will be discontinued and will be curved upwards, on both sides of the nala, at an angle of 45 degree. This will prevent the run off of water, stored in the trenches, into the nala. The curved portion will be of 5 m length on either side of the nala. The alignment of contour trenches may be done by a simple frame called “A” frame made of bamboo.

12.6.2. NALA BUNDING/CHECK DAMS :

12.6.2.1: The basic aim of nala bunds or check dams will be to reduce the run off and to arrest the silt. Nala bunding will start from the top of nala downwards. Nala bunds/check dams will be prepared 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 can also be used. Nala bunds will be prepared on nalas upto 8 m bed width. Beyond that these structures will not be useful and permanent engineering structures will be required. These structures are not being prescribed here. For the design of nala bunds, the nalas have been divided into three categories, namely (I) upto 4 m bed width (ii) between 4 m to 6 m bed width and (iii) between 6 m to 8 m bed width. The design of nala bund must be approved by the Forest Engineer. Nala bunds should be started from one side of the bed. Semi circular boulder pitching should be done on the top of the bunds, so that the stones are compact and are not washed away by water. The batter on upstream and downstream should be 2/1 and 1/1 respectively. The distance between the successive bunds will be such that standing on the site of lower bund the base of upper bund should be in line of eye sight of the person, standing on the nala For general guideline the distance between successive bunds for different slopes will be same as that for contour trenches.

SECTION :12.7 : SAW MILLS:

12.7.1.1: The following are the rules regarding Saw mill given in Bombay Forest Rules, 1942 and revised upto date: Prohibiting conversion of timber within certain distance of forests :

(i) Within the limits of any Reserved or Protected Forests (whether in charge of the Forest or Revenue Department) or of any land in respect of which a notification under section 4 of IFA 1927 declaring that is has been decided to constitute such lands Reserved Forest has been issued, and within one mile of such limits, no person shall establish a saw pit for cutting or converting of timber or manufacture charcoal without the previous sanction, in writing of the Range Forest Officer.

(ii) Within the limits of any Reserved or Protected Forests, or of any land referred to in clause (1) and within 80 Km of such limits, no person shall erect or operate any machinery or saw mill for cutting or converting of timber, without obtaining a license in that behalf.

(iii) (2) Any person desiring to establish a saw-pit or manufacture charcoal under clause (i), of sub-rule (1) shall make an application in that behalf to the Range Forest Officer and the Divisional Forest Officer, respectively.

(iv) Provided that where within a period of one month from the date of application the application the applicant fails to receive the sanction under clause (i) of sub-rule (1), the applicant may proceed to establish the saw-pit or to manufacture charcoal, but not so as to contravene any of the provision of the Act or any Rules made thereunder.

(v) (3) On receipt of an application under sub-rule (2) the Range Forest Officer, or as the case may be, the Divisional Forest Officer shall make such enquiry as he deems fit and after satisfying himself on the question whether or not there would be any objection to granting the sanction or license applied for, having regard to safeguarding the timber in any Reserved or Protected Forests or in any land referred to in sub-rule (i), may grant the sanction or license in the form in Schedule-E subject to the conditions set out therein, or refuse to grant the sanction license.

(vi) Every license granted or renewed under this rule shall, subject to the provision contained in this rule regarding cancellation, be effective for a period not beyond the day of December 31 from next following the date of its issue or renewal.

(vii) The Divisional Forest Officer may, on application made to him, renew the license issued under sub-rule (3) with effect the date of its expiry.

(viii) An application for renewal of a license shall be made before the expiry of the period of the license and failure to renew will render the licensee liable to punishment for operating the saw mill without a license.

(ix) Notwithstanding anything contained in the foregoing sub-rules, the Divisional Forest Officer, may where he has reason to believe a licensee is operating the saw mill in contravention of the provisions of these rules and conditions of the license or the licensee is indulging in activities prejudicial to the interests of the forest conservancy, at any time, revoke the license granted under this rule.

(x) Where the Divisional Forest Officer refuses to issue, or renew, or revokes, a license granted under this rule, he shall do so by an order communicated to the application or holder, as the case may be, giving reason in writing for such refusal or revocation.

(xi) Any person aggrieved by an order made under sub-rule (8), may, within thirty days of the service on him of the orders, appeal to the Chief Conservator of Forests who shall decide the appeal after giving such person and the Divisional Forest Officer making the orders, an opportunity of being heard, and the decision of the Chief Conservator of Forests shall be final.

(xii) (10) Nothing contained in this rule shall apply to the ordinary operations of domestic carpentry or to other similar works on a small scale.

12.7.1.2: Subsequently, the State Government has issued amendment vide notification No SWM1081/106836/F-6, dated 16th July,1981, the state Government put a ban on issue of new license However, if the applicant has already spent the money and completed the formalities, the licenses can be issued vide SWM 1081/106836 (A)F-6, dated August 18, 1981 The licenses of saw mill can be suspended for three months Saw mills are required to maintain three registers by the Government Orders No SWM-1082/CR-20/F-6, R & F D dated February 22, 1984 in FNo, I-intake, FN2-out-turn, FNo3-disposal Vide SWM 1082/2590/CR/F-6, dated December17, 1986, no saw mill can operate after sunset to sunrise without the written prior permission of the Divisional Forest Officer The Govt vide letter No TRS 1081/102380/F-2 R & F D dated July 18, 1981 has laid down the inspection norms of saw mills by the officers or various ranks The Range Forest Officer is to inspect-twelve, the Assistant Conservator of Forests-6 the Divisional Forest Officer-3 and the Conservator of Forests-1 saw mills in a month.

12.7.1.3: Section 129 Bombay Forest Rules, 1942 states that who so ever contravenes the provisions of Rule 88, shall be punishable with imprisonment for a term which may extend to six months or with fine which may extend to five hundred rupees or both

SECTION:12.8: CHARCOAL KILNS :

12.8.1.1: No permission to manufacture charcoal to the private person will be given in the Reserved or Protected Forests or in private areas upto 1 km from the boundaries of the forests.

SECTION :12.9 : USE OF HAMMERS:

12.9.1.1: The territorial Conservator of Forests shall issue guidelines and circulars regarding the shape and size of various types of hammers which will be used for the following works:

(i) Marking of coupes.
(ii) PORcase material to be marked by Forest Guard.
(iii) POR case material to be marked by Foresters/Round Officers.
(iv) POR case material to be marked by Range Forest Officers.
(v) POR case material to be marked by Asstt Conservator of Forests.
(vi) Marking of material from Jungle Depot to Coupe Depot.
(vii) Marking of material from coupe depot to sale depot.
(viii) Marking of sold material.
(ix) Marking of malki materials/ timbers by ACF.

SECTION:12.10: SCHEDULE OF RATES FOR OFFENCE CASES MATERIAL:

12.10.1.1: The Conservator of Forest (Territorial) shall in the beginning of the calendar year circulate the schedule of rates for offence cases material to all the Deputy Conservator of Forests (Territorial) in his circle.

SECTION :12.11 : MARATHI TRANSLATION OF THE WORKING PLAN

12.11.1.1: The territorial Conservator of Forests, shall entrust the work of translation of this working plan for the Sironcha Forest Division in marathi language to one of the Assistant Conservator of Forest and for supplying copies of the translated Marathi working plan document to the local field staff.

SECTION :12.12 : DEVIATIONS :

12.12.1.1: The following works will not constitute as deviation from the plan: Removal of dead fallen firewood and petty fellings carried out as mentioned in para under irregular harvesting.

12.12.1.2: The following works will constitute a deviation from the working plan:

(i) The felling and disposal of forest produce from submergence areas of dams, tanks, canal sites, road sides and other cases coming under the purview of the Forest Conservation Act, 1980. The sanction to it will be obtained.
(ii) All other deviations can be classified into following two categories as per draft amendment to article 191 and 192 of working plan code vide Agriculture and Forest Department Govt Resolution No FWP-1062/5625 (ii)-J, dated May 25, 1962.
(iii) Deviation which would seek to alter the schedule of working given in the working plan, the examples of which are : Both non-working of coupe in the prescribed year or working the coupe in the year not prescribed by the plan. Changes in the areas of coupe on account of disforestation or undertaking areas for execution of any special scheme under plan programmes and
(iv) Deviations which would involve alteration in the silvicultural treatment, for example: Stopping or curtailing fellings for planting because of shortage of labour,

funds, material for plantation work, or unsuitability of terrain and soil for undertaking plantations to the extent prescribed by the working plan. Extensive felling of dry trees killed by fire, fungus, insect attack or other natural calamities. Felling of unusual size and extent for special departmental works. Special fellings to meet a sudden new demand of a particular industry. Felling involving modifications in the prescribed marking rules.

(v) The sanction to all these deviations will be obtained. Application for sanction to such deviation will be submitted sufficiently in advance, so that such may be received as far as possible before the deviation occurs and without fail before the annual list of deviation is submitted along with the control forms.

12.12.2:PROCEDURE FOR OBTAINING SANCTION FOR DEVIATION :

12.12.2.1: All deviation proposals require the approval of the Director General of Forests as per instructions contained in Govt of India, Ministry of Agriculture No 6-14/84/FRY(WP) dated August 23, 1984.

12.12.2.2: The Deputy Conservator of Forests Sironcha will submit 8 copies of the deviation proposals to the Conservator of Forests through the Conservator of Forests, Working Plan, who on scrutinizing the proposals will forward them to the Conservator of Forests of the territorial circle with his opinion and report as to the manner the departure decided upon should be recorded. The Conservator of Forests will then pass on the proposals to the Chief Conservator of Forests through the Chief Conservator of Forests, Working Plans Circle with his remarks.

12.12.2.3: The Government of India has created a working plan cell in the Ministry of Environment & Forests under the Director General of Forests. This cell has to be associated while considering any deviation from the prescriptions of the approved working plans and this deviation will be allowed only after obtaining the approval of the Director General of Forests. All proposals for deviations must be entered in a Register of Deviation maintained by the Division office. The proforma for submission of deviation proposals have been given in this draft plan report.

SECTION :12.13 : IMPLEMENTATION OF WORKING PLAN:

12.13. 1.1: The territorial Conservator of Forests shall ensure that the prescriptions of the working plan are meticulously implemented by the territorial Deputy Conservator of Forests and the works shall be inspected as under

Conservator of Forests	2 %
Deputy Conservator of Forests	5 %
Asstt Conservator of Forests	20 %
Range Forest officer, Forester & Forest Guards	100%

12.13.1.2: The norms for inspection of works shall be in consonance with various standing orders and circulars issued by the Government of Maharashtra and the Department in this behalf. The responsibilities for any lapses shall be fixed by the disciplinary authority in accordance with law. The Conservator of Forest (Territorial) shall be the competent authority to decide any technical matter prescribed under the working plan and he will guide the subordinates in all such matters.

SECTION :12.14 : TRIBAL WELFARE :

12.14.1.1: To ensure a proper environmental and ecological balance, it is essential that the cultural survival and socio-economic well being of tribal is well taken care of. Unless it is done all attempts aiming at protection of forests shall be futile. Thus to ensure this, it is essential that the social and economic stability of tribal through forest based industries/programmes, safeguarding their genuine domestic needs of forest produce like bamboo, firewood and constructional timber, is under taken by the forest department. All activities of minor forest produce enshrined in Non-Wood Forest Produce Working Circle will beset up for tribal through forest department. Besides, the tribal can also be encouraged for collection of other minor forest produce which have not been covered under (NWFP) Working Circle.

SECTION:12.15 : PREVILEGES AND CONCESSIONS FOR FOREST PRODUCE

12.15.1.1. As per the National Forest Policy of1988, the first charge on the forest produce is that of tribal and other villagers living in and around the forests. Accordingly, the forest produce obtained from the forests will first be supplied to the local people at the rate fixed by the Conservator of Forests. The arrangement for supply of material will be made in such a way that the people should get the material within a radius of 2 km from their inhabitation. Only the surplus forest produce or the forest produce which is not required by the local people ;will be sold in open auction.

SECTION:12. 16 : BAMBOO HARVESTING OUTSIDE BAMBOO WORKING CIRCLE:

12.16.1.1: The bamboo clumps existing outside the bamboo overlapping working circle should be harvested from time to time for nistar supply or for departmental use or for sale by auction or tender. Such bamboo clumps shall be harvested as per directions issued by the concerned Conservator of Forests South Chandrapur Forest Circle, Chandrapur.

SECTION :12.17: BAMBOO PLANTATION:

12.17.1.1.: Bamboo is a poor man's timber and therefore bamboo plantation must be encouraged all over the division wherever possible and the produce obtained from such areas should be made available to the local people and burads for construction and other cottage industries purposes.

12.17.1.2: In Gadchiroli District lot of Burads are there who prepare bamboo mats and other articles to earn their livelihood. Bamboos are required by agriculturists also. Their requirements are fulfilled through departmental working of nistar coupes. However, in the present working plan the requirement is to be met but on the supply of bamboos by the agency, who will work.

SECTION :12.18: SMALL TIMBER, POLES AND FIREWOOD :

12.18.1.1: Small timber and poles for agricultural purposes and repairs to houses and firewood for domestic use will be supplied from the depots at concessional rates,

depending upon the availability of these produce. Depots will be opened at suitable places, throughout the division, so that people have to go to minimum possible distance to procure these produce. Range, round or beat head quarters will be chosen for this purpose, so that supervision and maintenance of these depots becomes convenient.

SECTION:12.19: REMOVAL OF EDIBLE FLOWERS, FRUITS, SEEDS AND OTHER MINOR FOREST PRODUCES:

12.19.1.1: Collection of moha flowers and seeds, charoli, tendu fruits, bor and other minor forest produce may be allowed free to tribal and local villagers for their consumption. However, no forest produce will be allowed to be removed free for commercial purpose. During collection of any produce, no felling or hacking of trees will be allowed.

SECTION: 12. 20 : FORESTRY EXTENSION:

12.20.1.1: In order to promote the forestry activity in the division, the forestry extension ;programmes should be taken up by Deputy Conservator of Forests Sironcha and regular awareness camps at regular intervals all over the division should be taken up with the active participation of local people, grampanchayats and voluntary agencies and the benefits of forestry and forest conservation should be explained to the local people through audio video programmes, poster presentation, nature walk and nature studies , forestry lectures, TV,programme etc.

SECTION:12. 21: WATER SUPPLY :

12.21.1.1: Due to erratic rains, water scarcity is felt in the summer during the year in which rainfall is scanty. At some places shortage of drinking water occurs. Adequate arrangements are needed to supply drinking water to staff at such places. The nurseries will be located at such places, where the water availability is sufficient. The augmentation of water supply can be thought of by constructing anicuts at suitable places. Besides, deepening of the existing wells and creating tube wells by using modern machinery available can also be thought of. At Elephant Camp at Kolamarka, even elephant are not getting sufficient water. As the forests are ideal for elephant camp, artificial water pool is to be created.

SECTION:12. 22 : CAMPING SITES :

12.22.1.1: No camping site for the harvesting purpose or for any other produce should be permitted within half a kilometer radius of the existing waterholes. The exhaustive list of such waterholes shall be prepared and maintained at divisional level and the copy of the same shall be provided to the Conservator of Forests, Working Plans-II, Chandrapur for record.

SECTION :12.23: RAIN-GAUGE AND TEMPERATURE RECORDING STATIONS :

10.23.1.1. Aheri and Sironcha have facilities for recording rains. Sironcha only is having facilities for recording temperature. There is no recording station in the interior. It is, therefore, recommended that the rain and temperature recording instruments should be installed at least at Range Headquarters where the forest staff can been trusted with the

working of recording the same. Automatic self recording rain gauge may also be used for the same.

SECTION:12. 24 : METEROLOGICAL OBSERVATIONS :

12.24.1.1: Since there are observatories at Gadchiroli and Sironcha and so there is no need of a separate observatory for the department. However, the recording of rainy days and quantum of rains are required to be maintained for plantation and other purposes. Therefore, instruments for recording the same are required to be installed at suitable places.

SECTION :12. 25 : BUILDINGS :

12.25.1.1: The details of buildings has been given in appendix no. XI in volume II of this plan.

SECTION :12.26 : ROADS ,CART TRACKS AND CULVERTS :

12.26.1.1: The details of roads, cart tracks and culverts shall be given in this final plan in appendix no. XII in volume II. The construction of new roads on the forest lands is not permitted under the Forest Conservation Act , 1980 without prior permission from Government of India.

SECTION :12.27 : ESTABLISHMENT AND LABOUR :

12.27.1.1: The total area of the divisions **277779. Ha.** The forest of the Division is more or less compact and there is prone to organized illicit felling in this area. Hence, for better control of all working plan operations, the RFOs and subordinates shall be properly placed. The Deputy Conservator of Forests Sironcha will fix the headquarters of subordinates' staff, according to work load.
(a) **Beat Norms** :- 400 to 800 ha where the areas with more population, well connected adjoining to cities and industries and 800 to 1100 ha for other areas.
(b)**Round Norms** :- 2000 – 3000 ha for populated areas and average area fixed is 3000 to 4000 ha.
(c) **Range Norms** :-180 to 225 sq km in less populated areas and 95 to 150 sq km in thickly populated areas.

12.27.1.2: As per these norms the number of ranges round and beats will be increased and the existing staff is not sufficient for execution of works. The reorganization of ranges, round and beats is required because some of the areas have been transferred to FDCM and their beat guards are left with no work and therefore the services of these guards may be utilized elsewhere. Where the beats are vacant for want of postings or new appointments.

12.27.1.3: Maintenance of Land Records - The land records shall be maintained which will constitute the procurement of :
(a) 7/12 record of all survey numbers belonging to forests.
(b) Village maps on 1:5000 scale of either Ekatrikaran or Punarmojani whichever is later and rectified later.

(c) A comparative chart of three surveys i.e. Jamabandi (1911-1921), Punarmojani and Ekatrikaran and difference in area of forest survey numbers in each survey .

12.27.1.4: Mutation of Land records – The 7/12 extract of record of right shall be mutated in favour of forest department, where not done earlier. This will prevent any unlawful diversion. In each 7/12 , the following entries will be recorded (in Seven) Govt of Maharashtra (महाराष्ट्र शासन) Forest Department (वनविभाग) Reserved/Protected Forest (राखीव / संरक्षित वने). The above entries shall be in a manuscript and no stamps should be used to show these descriptions.

12.27.1.5: The transfer of forest land to Forest Department according to statistics, there are still large number of forest areas with Revenue Department, even though State Government has issued instructions in 1976 to hand over them to Forest Department. In this Division an attempt had been made in last year and found no major forest land left with Revenue Department. Approximately 86% 0f Geographical area is with Forest Department as per the various notifications.

SECTION :12.28: MISCELLANEOUS AREAS:

12.28.1.1: Most of the forest areas in this division have been declared forest either reserved forest or protected forest in blocks in the past. But the proper survey and demarcation of these areas have not been carried out. Due to that exact area statement is to be finalised. As long as, the final survey and demarcation is not completed some areas is bound to remain in abeyance. Also some reserved forests are bed of rivers forming the Inter State Boundary. These areas are not the part of any working circle. Some areas are under various forestry purposes e.g. Offices, Forest Depots, Nursery. Such areas have treated as areas under miscellaneous areas. A detail of it is given in the following table.

Table No-123

Sr №	Range	Gross area (ha)	Net area (ha)	Miscellaneous area
1	Asarali	30,954.278	23,973.768	FDCM =16,122.186 + *49, 164.415 ha as miscellaneous area.
2	Dechali	27,247.669	24,070.506	
3	Jimalgatta	27,594.494	21,629.981	
4	Kamalapur	49,083.667	49,083.667	
5	Pranhita	35,396.830	35,396.830	
6	Sironcha	58,343.807	58,343.807	
Sironcha Division		**277785.160**	212,498.579	

* Out of 49,164.415 ha, 48,440.679 ha area is area of difference in notified area and planimetted area. It may be due to approximate area as notified in the concerned notifications. 723.736 ha are under river bed notified as R.F. and not included in any compartment.

SECTION:12.29: ENCROACHMENT:

12.29.1.1: Encroachment upon forest land in the tract dealt with is a chronic disease eating the body of forest slowly. The government of Maharashtra had taken decision in 1978 and 1979 that certain encroachment on forest area pertaining to 1-4-1972 to 31-3-1978 were to be regulated if found eligible as per the conditions laid down for that purpose. The process

of ascertaining the eligibility of encroachers is still going on various authority levels and under compliances to this office.

Table No-124

SrNo	Period	No. of encroachers	Area under encroachment in ha.
1	Upto 1978	3051	3799.400
2	After 1978	1246	1318.041
Total for division		4297	5117.441

SECTION:12.30: FOREST CONSERVATION ACT IMPLEMENTATION

12.30.1.1. No major or medium project has been sanctioned for forest land for non forestry purpose. Only one project for water tank erecting for drinking water supply had been sanction for area 1.0 ha and status remaining unaltered.

SECTION:12.31: WORKING PLAN NOTE

12.31.1.1: At end of the working plan period working plan note shall be prepared by the Conservator of Forests (Territorial) in consultation with Deputy Conservator of Forests (Territorial) Sironcha division and the note shall be forwarded to the Conservator of Forests, Working Plan Division for preparation and revision of the working plan of the forest division.

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CHAPTER – XIII

CONTROL AND RECORDS

SECTION –13.1: CONTROL AND RECORDS:

The following records will be maintained in the Territorial Forest Division, Sironcha at Allapalli office:

(1) Control Form.
(2) Compartment History.
(3) Plantation and Nursery Registers.
(4) Divisional Note Book

13.1.1.1: CONTROL FORMS:- All control forms and records shall be maintained as per the guidelines given in chapter No IX of working plan code of Maharashtra State and the Standing Order No 24, Chapter I prescribed by the office of the Principal Chief Conservator of Forests, Maharashtra State, Nagpur (then CCF, MS Pune, dt 30.11.967).

13.1.1.2:- The records of all harvesting, subsidiary cultural operations, regeneration works and soil and moisture conservation works carried out as per the this working plan prescriptions, will be maintained in the control forms. The prescribed proforma of the control forms have been given in the Volume II in Appendix №XVI.

13.1.1.3:- Two sets of control forms will be prepared. One set will be kept in the divisional office and the other set will be flying for the use of the Conservator of Forests Working Plan Chandrapur II. The flying set will be sent annually by the Deputy Conservator of Forests Sironcha Division at Allapalli to the Conservator of Forests Working Plan Chandrapur II not later than October, 1 every year taking the necessaries entries. All entries showing the deviations from the prescriptions will be underlined in red. The CF Working Plan Chandrapur II will scrutinize it and will send it to the territorial Conservator of Forests South Chandrapur Forest Circle at Chandrapur. Conservator of Forests South Chandrapur Forest Circle at Chandrapur will in turn send it to Chief Conservator of Forests Working Plan Nagpur with his remarks not later than February, 1 of the following year. The Chief Conservator of Forests Working Plan Nagpur in turn will forward them to the Additional Principal Chief Conservator of Forests (Production and Management) Maharashtra State, Nagpur for perusal and orders where required.

SECTION – 13.2: COMPARTMENT HISTORY:

13.2.1.1:- Compartment histories i.e. the records of various forestry activities and observations made in the past year will be maintained in form № I to V as given in the Appendix № XVI of this plan.

Form № I: Description of the Compartment.
Form № II: Records of plantations and changes in growing stocks.
Form № III: Records of operations and put - turns
Form № IV: Records of observations.
Form № V: Records of injuries.

13.2.1.2: Each Compartment must have a separate file for its records. Compartment history must be maintained in the office of Sironcha Forest Division at Allapalli since they keep the record of past management practices and their effects on the growing stocks.

13.2.1.3: Every year, in July, the Range Forest Officer should fill in the necessary information and will send it to DCF Sironcha Forest Division for scrutinizing, editing through ACF in charge, who after doing so will get them typed and sign them. One copy of the forms will be filed in the divisional compartment history file while one copy each will be sent to the RFO and CF Working Plan in the month of August in the following year.

SECTION: –13. 3: PLANTATION AND NURSERY REGISTERS:

13.3.1.1: Plantation registers will be maintained for all the areas regenerated artificially in the Form № I to Form № IX as given in the Appendix № XVI of this plan.
13.3.1.2: Nursery registers will be maintained in the Form № I to Form № X as given in the Appendix № XVI of this plan.

SECTION: – 13.4: DIVISIONAL NOTE BOOK:

13.4.1.1:-At divisional level all important matters shall be recorded by the DCF every year with his explicit opinions about the working plan operations. A brief note about the plantation will also be recorded by the DCF under appropriate heads. The division note book proforma have been given in the Appendix № XVI of this plan.

SECTION – 13.5 : FIRE RECORDS :

13.5.1.1:-They should be maintained as per the latest orders from State Government from time to time.

SECTION: –13. 6: OTHER RECORDS:

13.6.1.1:- List of amendments to the working plan and list of area changes will be maintained in prescribed forms.

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CHAPTER XIV

FINANACIAL FORECAST

SECTION: 14.1: WHY FINANCIAL FORCAST?

Working plan for the Sironcha has been prepared with specific objectives in respective working circles. Various prescriptions have been given to achieve these objectives. Execution of works needs proper planning and adequate financial provision for that. Execution of works will generate some services and revenue to exchequer. That is why we need financial forecast for the plan.

SECTION: 14.2: EXPENDITURE

14.2.1.1: EXPENDITURE ON ESTABLISHMENT: To run the proper administration, an efficient administrative set is required. It is recurring expenditure on the set of organization i.e. on salary and other benefits to officials and staffs. Maintenance of offices, vehicles, roads, buildings, machines, communications and other paraphernalia.

14.2.1.2: EXPENDITURE ON EXPLOITATION OF FOREST PRODUCES: During the implementation of prescriptions of the draft report, some forest produces are going to be harvested. In selection cum improvement working circle, teak plantation working circle, bamboo (overlapping) working circle and improvement working circle and to some extent in protection working circle and non wood forest produce (overlapping) working circle, forest produces in the form of timber, firewood, bamboo or other produces like tendu leaves etc will be certainly harvested. It will need expenditure to be incurred on various activities.

14.2.1.3: EXPENDITURE ON REGENERATION ACTIVITIES: Main objective of this plan report is to have sustainable development of forests. Which ultimately requires regeneration of forests either naturally or artificially. Regeneration activities will never be executed without spending expenditure and services.

14.2.1.4: EXPENDITURE ON CONTROLLING ACTIVITIES: Draft plan report envisages to have controlling activities to achieve its objectives. Such as maintaining boundary marks and $1/5^{th}$ boundary maintenance, fire and grazing control need constant controlling activities and expenditures.

14.2.1.5: EXPENDITURE ON SOIL AND MOISTURE CONSERVATION: Soil and moisture conservation measures will require expenditures to be incurred for their executions.

14.2.1.6: EXPENDITURE ON WILDLIFE PROTECTION, ECOTOURISM AND CONSERVATIONS: Protection of wildlife in both forms faunal and floral and their conservation and practicing ecotourism certainly leads to incurring of expenditures.

14.2.1.7: EXPENDITURE DETAILS:- Since the expenditure on various items are linked with minimum wage rate for wages and the prevailing salaries of staffs and officers in a dynamic linkage with market rate and dearness to the point of time. It is not possible to work out the expenditure on specific item at a point of time. We can have the glimpses of it based on certain assumptions. First of all we assume that wage rate and salaries and

other commodities consumption are going to be static. The quantum of works to be carried out also going to be constant and furthermore the areas to be tackled yearly are also not going to vary. Based on these assumptions, the calculations are made. These are symbolic and not final.

(a) **TIMBER:** Cost of exploitation per cubic meter timber = Rs. 1000/-
Cost of exploitation per beat firewood = Rs. 300/-
Bamboo/ADMT @ 1300/- per ADMT

Table No-125

Sr No	Working Circles	Area in ha	Area/ year in ha	Yield		Expenditure in Rupees in lakh
				Timber	Firewood	
1	SCIWC	130,021	6400	30,800	13,200	503
2	IWC	56,000	2800	500	1000	
3	TPWC	4000	400	10,000	10,000	
4	OTPWC	6000	1200	1200	1800	
5	BOWC	31000	10,000	10,000ADMT		
	Total			42,500	26,000	503

Yield calculation has been done in respective working cycles. Bamboo has been leases out to Nav Durga Bamboo Craft. Hence no expenditure on part of department.

(b) REGENERATION:-

(i) **NATURAL REGENERATION:** Natural regeneration will be carried out in selection cum improvement, improvement working circle and protection working circle.

Table No-126

Sr No	Working Circles	Area in ha	Area/ year in ha	Expenditure(Rupees in lakh, (Rate @ 5 man days/ha & @ 70/- per daily wage)
1	SCIWC	132,021	2400	8.4
2	IWC	56000	2800	9.8
3	PWC	14152.093		4
Total				22

(ii) ARTIFICIAL REGENERATION: Artificial regeneration works are required in teak overwood removal only. The expenditure will incurred as per the rate sanctioned by the office of PCCF MS.

Table No-127

Sr No	Working Circles	Area in ha	Area/ year in ha	Operation	Expenditure in Rupees in lakh Rate of expenditure @ 10000/ha & @ 70/- per daily wage
1	TPWC	4,000	250	PPO/PYO	16
				FYO	25
				SYO	16
				TYO	11
				4^{th} YO	9
				5^{th} YO	6

(c) SOIL AND MOISTURE & OTHER ITEMS:- Exhaustive plan will be prepared and expenditure will be procured from Employment Guarantee Schemes and Rural Development Schemes and Water Conservation Schemes of Central and State Department. Hence no quantification has been attempted.

14.2.2.1:- YEAR WISE DETAILS OF EXPENDITURE: Expenditure to be incurred during plan period summarized in following table.

Table No-128

All expenditure is given Rupees in lakh.

Year	Establishment	Boundary, fire, grazing etc control	Timber	S&M works	Natural Reg	Artificial Regeneration						TOTAL
						PPO	FYO	SYO	TYO	4th YO	5th YO	
05-06	350	105	503	10		16	…	…	…	…	…	974
06-07	350	105	503	10	22	16	25	…	…	…	…	999
07-08	350	105	503	10	22	16	25	16	…	…	…	1,015
08-09	350	105	503	10	22	16	25	16	11	…	…	1,026
09-10	350	105	503	10	22	16	25	16	11	9	…	1,035
10-11	350	105	503	10	22	16	25	16	11	9	6	1,041
11-12	350	105	503	10	22	16	25	16	11	9	6	1,041
12-13	350	105	503	10	22	16	25	16	11	9	6	1,041
13-14	350	105	503	10	22	16	25	16	11	9	6	1,041
14-15	350	105	503	10	22	10	25	16	11	9	6	1,041

SECTION: 14.3: ANNUAL REVENUE EXPECTED FROM ALL SOURCES:

14.3.1.1: REVENUE FROM EXPLOITATION OF FOREST PRODUCES: - Exploitation of forest produces not only leads to incurring expenditure but also generates revenue in the forms services and goods. Revenue is going to be received from exploitation of timber, firewood, bamboo, tendu leaves, services of grazing, ecotourism, minor forest produces etc.

14.3.1.2: REVENUE FROM ALL SOURCES

Table No-129

Sr No	Item	Quantity	Rate	Revenue in lakh
1	Timber	42,500 cmt	Rs 10,000/cmt	3,698
2	Fuel Beats	26,000 beat	Rs 1,000/beat	239
3	Pole	30,000 No	Rs 150/pole	45

4	Bamboo	10,000 ADMT	Rs 600/ADMT	60
5	Tendu	53,000 std bags	Lump sum	200
6	Miscellaneous		Lump Sum	8
5	Total			**4,250**

Note: Timber: Teak 10% of total timber, @ Rs15000/- per cubic meter and Non Teak @ Rs 8000/- per cubic meter. Fuel beat: Teak 10% of total beat @ Rs 2000/- per beat and non Teak @ Rs 800/- per beat.

14.3.2.1:- STATEMENT OF REVENUE AND EXPENDITURE FOR THE ENTIRE PLAN PERIOD: (In Rupees in lakh)

Table No-130

Sr No	Year	Timber	Fuel Beat	Bamboo	Tendu	Other	Total Revenue	Total Expenditure
1	**2005-06**	3,698	239	60	200	8	4,250	974
2	**2006-07**	3,698	239	60	200	8	4,250	999
3	**2007-08**	3,698	239	60	200	8	4,250	1,015
4	**2008-09**	3,698	239	60	200	8	4,250	1,026
5	**2009-10**	3,698	239	60	200	8	4,250	1,035
6	**2010-11**	3,698	239	60	200	8	4,250	1,041
7	**2011-12**	3,698	239	60	200	8	4,250	1,041
8	**2012-13**	3,698	239	60	200	8	4,250	1,041
9	**2013-14**	3,698	239	60	200	8	4,250	1,041
10	**2014-15**	3,698	239	60	200	8	4,250	1,041

SECTION: 14.4: EXPENDITURE ON PLAN PREPARATION:

Expenditure on plan of Sironcha Forest Division cannot be separately worked out. Working Plan Division Chandrapur-2 has been given the responsibility of preparing working plan for Forest Divisions and conducting enumeration survey of forest resources of various forest divisions. Revision of Working Plan for Sironcha Forest Division was taken during 2000-01 and simultaneously, Revision of Chandrapur Forest Division and Allapalli Forest Division were going on by this division. Survey of forest resources of Sironcha, Allapalli, Chandrapur, Wardha and Gadchiroli Forest Divisions had been conducted since then. Office of Conservator of Forest Working Plan Nagpur also incurs expenditure on GIS works . Hence actual expenditure on preparation of this plan cannot be segregated. Proportionate expenditure has been worked out.

Proportionate Expenditure	Rs 3,500,000.
Working Plan Area	212,498.579 ha
Per unit area cost	Rs 16.47/ha

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