I. Summary of the Plan

A. FACTS ON WHICH PRESCRIPTIONS ARE BASED

A.1. THE TRACT DEALT WITH

A.1.1. Name and Situation: This Working Plan deals with the Reserved Forests, Protected Forests and the unclassified forests of Gondia Forest Division in Maharashtra. The Division is situated between 20°39' and 21°38' North latitude and 79°50' and 80°41' East longitude. It covers the entire Gondia District. The forest area under the plan is 1,778.29 km^2 including 800.36 km^2 of the Reserved Forests, 660.08 km^2 of the Protected Forests and 130.22 km^2 of the unclassified forests. The unclassified forests include 2.60 hectares of non-forest land transferred for the compensatory afforestation. These figures exclude 328.24 km^2 of the Reserved Forests allotted to the Forest Development Corporation of Maharashtra (FDCM) and 187.63 km^2 of Zudupi Jungles transferred for compensatory afforestation and management, and include forest areas diverted for the non-forestry purposes and infra-structural development. Sardar, Gurjar and Joshi's Working Plan for the Reserved Forests expired in 1996. Benakatti's Working Scheme for a part of the Protected Forests (Fazil forests) was applied till 1974-75. His Working Scheme for the remaining Protected Forests (Dochand Forests) was not sanctioned, and such areas have not been brought under regular forest management till date.

A.1.2. Configuration of the ground: The area is generally undulating and hilly with moderate to steep slopes dissected by meandering streams. This area has varied lithology and intricate geological structure. Tropical sub-humid weathering of crystalline metamorphic and igneous rocks has created highly varied soils. Sihar, Morand, Kardi, and Bhardi are important local soil types.

A.1.3. Climate: The climate of the Gondia district is generally hot and dry. Summer (middle of February to middle of June), monsoon (mid-June to October) and winter (November to Mid-February) are three main seasons. The high daytime temperature during April and May becomes rather unbearable due to hot winds and dryness of the atmosphere. The average annual rainfall is about 1200 mm. Major part of the rainfall is obtained from the Southwest monsoons during June to September. Maximum rainfall is received during July and August. Wind is generally light to moderate, but the velocity increases during later part of the summer and the monsoon months. The incidence of frost is uncommon.

A.1.4. Water supply: The main rivers passing through the division are Kanhan, Chulband, Garvi and Bagh, which are fed by many small ephemeral tributaries. Scarcity of drinking water during summer is a major problem in many villages.

A.1.5. Distribution and area: The forest area of the Division covering 2,106.53 km^2 can be classified as the Reserved Forests (RF), the Protected Forests (PF) and the unclassified forests, which are groups of all areas other than the first two legal classes. The unclassified forests can be broadly clustered in three sets: (1) traditionally managed by the division, (2) non-forest areas transferred to the division for the compensatory afforestation through the stipulations under the Forest (Conservation) Act, 1980, and (3) the unoccupied land identified as the Zudupi Jungle and transferred to the division for management and the compensatory afforestation in future.

Table A.1. Distribution of the forest area in ranges of the Gondia Division

Name of the Range	Compt	Reserved Forest (Km^2)	Compt	Protected Forest (Km^2)	Compt	Unclassified forest (Km^2)	Compt	Zudupi Jungle (Km^2)	Compt	Transferred to FDCM (Km^2)	Compt	Total Forests (Km^2)
Amgaon	1	0.76	48	24.44	0	0	52	15.94	0	0	101	41.14
Chichgarh	71	162.31	269	113.06	1	0.59	36	8.31	14	41.44	391	325.71
Deori	73	131.71	382	140.03	44	14.66	65	17.75	48	95.18	612	399.33
Gondia	3	2.90	64	28.54	0	0	88	26.60	0	0	155	58.04
Goregaon	25	43.86	153	79.50	28	31.13	66	22.43	26	64.42	298	241.34
Pratapgarh	70	166.71	212	80.63	11	4.76	38	17.86	3	12.29	334	282.25
Rajoli	110	235.53	223	111.82	34	24.87	18	10.45	21	54.19	406	436.86
Salekasa	29	56.58	295	82.06	108	54.21	75	68.29	27	60.71	534	321.85
Total	**382**	**800.36**	**1646**	**660.08**	**226**	**130.22**	**438**	**187.63**	**139**	**328.24**	**2831**	**2,106.53**

A.1.6. State of boundaries: The Reserved Forest boundaries in the Forest Blocks are generally in better conditions. The rest of forest boundaries need thorough review. The boundary TCM (Trench-cum-mound fencing) dug up in the late 1980's under the Employment Guarantee Scheme often leave out bands of the forest area. A systematic survey and demarcation with assistance of the Land Records Department is urgently required to ensure that the forests are not encroached upon and lost.

A.1.7. Rights and concessions in the Reserved Forests: All rights have been extinguished in the Reserved Forests. However the state governments have admitted some concessions like cattle grazing and firewood collection to the villagers from time to time.

A.1.8. Rights and concessions in the Protected Forests: The access to the Protected Forests is governed by the Vidarbha Protected Forest Rules and provisions of the Nistar Patrak prepared during 1954-56 after conducting the Nistar enquiry in villages. The Nistar generally includes poles for agricultural implements, cattle sheds, firewood, bamboo, thatching grass, fodder grass, fencing material, bark, fibre and *paidawar* in edible fruits, flowers, roots, honey, wax, etc. Items and quantity of the produce permitted in the Nistar Patraks vary within a narrow range.

A.2. THE FORESTS

A.2.1. The forests of the Gondia division belong to the Subgroup 5A – Tropical Dry Deciduous Forests of Champion and Seth's classification. Edaphic factors, topography and past management cause local variations. Garari (*Cleistanthus collinus*) is the most common species in the middle storey in the forest.

Table A.2. Forest types in the Gondia Division *(Champion and Seth's classification)*

Type Notation		*Type description*
Group 5		Tropical Dry Deciduous Forests
Sub-group 5 A		Southern Tropical Dry Deciduous Forests.
Climate types	5A/ci	Dry teak bearing forests
	5A/cia	Very dry teak forest
	5A/cib	Dry teak forest.
	5A/c3	Southern dry mixed deciduous forests
Local subtypes		1. Superior Quality Mixed Forests
		2. Medium Quality Mixed Forests
		3. Poor Quality Mixed Forests
Primary serial type	5/1s1	Dry tropical riverain forest

The forests are subjected to injuries caused by a number of factors. They can be classified as injuries caused by man, wild animals and parasites as well as by factors like frost, drought, fire etc.

A.3. UTILISATION

A.3.1. Agriculture customs and wants of people: The Gondia Division falls in the Gondia District. The estimated population of the District is about one million. About 62% of the population live in the rural areas. The scheduled castes and the scheduled tribes make 17% and 14%, respectively, of the population. The 1992 cattle census estimated 13.26 Lakhs of the domestic animals in the district. Cows and bullocks make half, and buffaloes contribute about 14% of the domestic animals. Sheep and goats account for nearly one-fourth of such animals. Forests play very important role in the daily life of local population. They depend on forests for timber, poles, firewood, bamboo, fodder, grass, fruits as well as a number of non-wood forest produce for household consumption and sale.

A.3.2. Forest- related occupation: Local artisans called Burads make their living by making baskets, mats, dholis, etc. from bamboos. They sell most of their products locally. Local people get gainful employment during Tendu leaf collection season from the last week of April to mid-June. Gondia is also a major centre of the *bidi* manufacturing. The division has 55 sawmills. Large number of furniture shops exists in urban as well as rural areas of the division. Arjun plantations in some areas of the division were under the *tussar cultivation*, but such activities are not permitted at present for want of proper authorisation. The forest is suitable for *lac* cultivation mainly on the Palas trees. Villagers living near forests collect a variety of non-wood forest produce such as *Moha flowers, Moha fruits, charoli seeds, gum, honey, etc*. for their household consumption and sale.

A.3.3. Markets and marketable produce: These forests are rich in valuable timber like Teak, Bija, Saja, Surya and Dhaora. Dongargaon and Nawegaon are main timber depots of the division. Firewood is also sold in public auction at the permanent or the temporary depots at Deori, Chichgarh Kohmara, etc. Nawegaon is also a major bamboo depot. However, bamboo is also auctioned in temporary depots at Chichgad, Salekasa, etc. Gondia, Nawegaon, Lakhandur, Sakoli, Bhandara, Nagpur and Raipur are main timber markets in the region. The division is known for its bamboo production, but the productive bamboo areas are shrinking. The division has about 37 Tendu units yielding about 45,000 standard bags fetching more than two crore rupees as revenue.

A.3.4. Lines of export: The division has excellent road and rail connections, and therefore, timber and other forest produce can be conveniently transported to any part of the country. The division falls on the major Mumbai–Howrah broad gauge rail route. Gondia–Chandrapur line passes through Rajoli and Pratapgarh ranges. A network of forest roads criss-crosses the division. Many of these roads have been upgraded to tar roads and are being maintained by the Public Works Department and the Zilla Parishad. The division maintains the remaining forest roads according to the requirement and availability of funds.

A.3.5. Method of exploitation and cost: The coupe harvesting is carried out either through the registered Forest Labourer Co-operative Societies (FLCS) or directly engaging local villagers by the local staff.

A.4. STAFF AND MANPOWER AVAILABILITY

A.4.1. Staff: The division has sanctioned posts of twenty gazetted officers including six temporary Range Forest Officers. Among the 483 non-gazetted officials, 208 posts are temporary. Number of sanctioned Foresters' and the Forest Guards' posts are 74 and 297, respectively.

A.4.2. Manpower: There is usually no difficulty in procuring manpower for the forestry works. Exceptions are the months July, August and November, when paddy is transplanted or harvested. In drought years, there is usually demand for additional forestry works to provide employment opportunities.

A.5. PAST SYSTEMS OF MANAGEMENT

A.5.1. While the Reserved forests are managed under the working plans since 1897, the ex-proprietary Forests were brought under scientific management at a much later stage. Early reservation period from 1879 to 1897 was of limited activities. The working plan for the Reserved Forests of the old Pratapgarh Range (1897–1910) was the first working plan for the Gondia Division. The authors of the successive four working plans for the combined Bhandara and Gondia Divisions are J. W. West (for 1910–1930), Chadha (for 1930–1940), Jagdamba Prasad (for 1940–1957) and Trivedi (for 1957–1977). The last working plan prepared by M.G.Sardar, P.J.Gurjar and S.G.Joshi for the period of 1981-82 to 1995-96 covered the entire Reserved Forests including all the Forest Blocks of the Gondia Division and area reserved in 1977-1978.

A.5.2. Extensive forest areas of the present Gondia Division was under the ownership and control of the Zamindars (Proprietors), who used to sell the forest produce in irregular manner. Only the Darekasa Zamindari forests had some sort of working plan. Local villagers were allowed to extract the forest produce for their requirement or graze their cattle on payment in kind or cash. Soon after the independence, the Zamindars indulged in unsystematic and extensive felling in their forests accelerating the process of forest degradation and the forest loss. The proprietary rights were abolished in 1951. Most of the areas under forests were transferred to the Forest Department during the period from 1951 to 1954 to management the forest resources. The Mahala's Working Scheme was the first plan for 1310.73 km^2 of the Protected Forests (767.64 km^2 of the old *Fazil* Forests and 534.09 km^2 of the old *Dochand* Forests). Almost all the ex-proprietary forests under the management of the Forest Department were declared as the Protected Forests during 1950's. Benakatti had prepared two separate working schemes for the ex-*Fazil* and the ex-*Dochand* forests. The working scheme for the old *Dochand* Forests did not receive the approval of the state government, and these Forests remained un-worked. His working scheme for the old *Fazil Forests* excluding the areas under the Bagh and the Itiadoh Projects and covering 890.94 km^2 forest area was for ten years till 1972, but later extended till 1979-80.

A.6. GROWTH OF TEAK

A.6.1. Growth data of teak was obtained from the stem analysis of four trees on the site quality II of the Deori Range and other four trees on the site quality III in the Gothangaon Protected Forests of Rajoli range. The data reveal that teak trees on site quality II can attain 1.60 meter GBH and 26.5 meters in height in 90 years, which roughly coincides with the maximum volume production per annum, that is, the CAI and MAI curves intersect at 90 years. Teak trees on site quality III have their CAI and MAI curves intersecting at 85 years corresponding to 144 cm GBH.

A.7. GROWTH OF SUPERIOR NON-TEAK SPECIES

A.7.1. Patil and Sardar carried out the stem analysis of Bija trees. The CAI and MAI curves intersect near 90 years corresponding to 130 cm in GBH. These curves for Ain intersect at the age of 120 years, which corresponds to 135 centimetre GBH.

A.8. STOCK MAPPING

A.8.1. The stock mapping by traditional procedure was not done for this plan. The satellite imageries were used to classify the forest patches according to density as revealed in the NDVI mapping. The line-plot sampling data were used as supplementary information for preparation of stock maps.

A.9. ENUMERATION

A.9.1. The Forest Resources Survey Unit, Amravati carried out the tree enumeration in 0.36-hectare (60 metre x 60 metre) plots and the regeneration survey in 0.04-hectare (20 metre x 20 metre) sub-plots. The systematic line plot sampling was done at the intersections of 600-meter grid. The Forest Inventory Management System was used for analysis.

A.10. DIGITAL DATABASE

A.10.1. The Forest Geomatics Center, Nagpur has prepared a comprehensive digital database in the GIS (Geographical Information System) environment for the Gondia division. However, 3029.22 hectares of Protected Forests and 740.15 hectares of Unclassified forests areas could not be incorporated for want of proper maps. Hence, the database updating and correction must continue to ensure accurate boundary representation. Glaring errors in the old maps and records were corrected. The Reserved Forests in Usrimetta village and the Protected Forests in Tamborra village can be taken as examples.

A.11. WILDLIFE CONSERVATION

A.11.1. The division has a fairly good distribution of wildlife spread all over the division except near the habitations. The best sighting is along boundaries of the Navegaon National Park and the Nagzira Wildlife Sanctuary. Panther, Tiger, Jackal, Jungle cat and Hyaena are also common carnivores. Nilgai, Sambhar, Cheetal and Gaur are large herbivore mammals. The tract has large avifauna. Migratory birds are found near tanks during the season.

A.11.2. Hunting in the forests was regulated through the hunting licenses issued for specific shooting blocks. Presently, the law does not permit sport hunting of wild animals. The wildlife is threatened by habitat damage` caused by factors like increasing human and cattle population, encroachment for cultivation, fire, communicable diseases and poaching facilitated by the improved road network and efficient weapons. Cattle kill by the wild animals is also common.

B. SUMMARY OF PRESCRIPTIONS

B.1. TREATMENTS PRESCRIBED

B.1.1. Existing protection forests will be preserved and augmented, and the habitat management for wildlife conservation will receive the highest priority. Prescribed soil and moisture conservation works should improve moisture regime and prevent soil erosion. A time-bound programme of the boundary demarcation should ensure territorial integrity of forests. Utilisation of forest areas diverted for non-forestry use shall be reviewed periodically to ensure that the areas are used for the intended purpose, and their use contribute to the sustainable conservation. Natural regeneration and rootstock management will be preferred to plantations, which will be used as the supplementary activity. Sustainable production of the Non-Wood Forest Produce (NWFP) will be encouraged. Timber, if otherwise available, will be harvested from dense tree forests capable of producing large timber on sustained basis. Open forest areas and traditional pasture forests will be managed with active participation of tribal and village communities for meeting local domestic needs.

B.2. WORKING CIRCLES AND THEIR DISTRIBUTION

B.2.1. The crop analysis is based on the species and tree girth distribution in the enumeration data and the density distribution in the satellite imageries. Prescriptions are primarily based on the site conditions expressed in the treatment types, while the working circle allocation is a suggestive factor showing dominance of the treatment type.

B.2.2. Areas susceptible to high erosion and falling in the catchments of large water bodies are included in the Protection Working Circles (PRT). Compartments or part thereof under the non-forest use, forest nurseries or other special purposes and those allotted to the FDCM are covered under the Miscellaneous Working Circles (MWC). Compartments having sufficiently dense forests and mature trees suitable for harvesting are allotted to the Selection-cum-improvement Working Circles (SCI) for wood production, and having promising open forests or dense forests deficient in mature trees are assigned to the Improvement Working Circles (IWC) for tending the crop. The Afforestation Working Circle (AWC) has small isolated forest patches, areas of sparse tree crops or dense shrubby growth, and open areas without tree growth, and are expected to respond to tending, protection and tree plantation. The emphasise, however, will continue on tending of existing rootstock. Compartments having more than 5 bamboo clumps per hectare are included in the Bamboo (Overlapping) Working Circle (BMB)

B.2.3. Table B.1. Distribution of forest areas in working circles (Planimetered Area)

Working circle	Reserved forest (ha)	Protected forest (ha)	Other forest (ha)	Total area (ha)	% of forest	Compart-ments
Area-specific working circles						
Selection-cum-Improvement (SCI)	54,179.93	14,734.25	7,337.74	76,251.92	35.3%	411
Improvement (IMP)	22,082.3	15,750.7	3,027.6	40,860.6	19.0%	385
Afforestation (AFF)	3,048.4	27,038.3	3,017.6	33,104.3	15.3%	1211
Protection (PRT)	2,004.1	6,837.3	3.6	8,845.00	4.1%	113
Miscellaneous (MIS)*	32,468.90	4897.3	19,503.3	56869.5	26.3%	711

Working circle	Reserved forest (ha)	Protected forest (ha)	Other forest (ha)	Total area (ha)	% of forest	Compart-ments
Total	**113,783.63**	**69,257.85**	**32,889.84**	**215,931.1**		**2,831**
Overlapping Working Circles						
Bamboo (Overlapping)	32818.48	1042.08	983.48	34844.04	16%	157
*JFM (Overlapping)				Entire forest		
*NWFP (Overlapping)(NWF)				Entire forest		
Wildlife (Overlapping)				Entire forest		

*** Note: The Reserved Forests under MIS excluding 40.60 ha are managed according to the plan prepared by the FDCM (139 compartments). The Zudupi Jungle and compensatory afforestation areas have been assigned one notional compartment number for each village, and the detailed numbering will be done later.**

B.3. PERIOD OF THE PLAN

B.3.1. This plan will be implemented for ten years from the year of approval.

B.4. DEMARCATION, MARKING AND TREATMENT TYPES

B.4.1. The annual coupes will be demarcated one year in advance, and the treatment map will be prepared using the GIS outputs as the compartments base maps. Following types of the treatment areas will be identified:

Table B.2. Treatment types for annual coupe operations

Treatment areas	***Symbol***	*Characteristics*	*Minimum patch size*
Protection area	**A1**–type	Area having more than 25 degree slope	Any size
	A2–type	20 meter wide strip on both sides of streams	
	A3–type	Area susceptible to excessive erosion	
Open forests	**B1**–type	Open forests (density < 0.4) with rootstock	**5** hectare
	B2–type	Open forests (density < 0.4) without rootstock	
Pole Crop and old plantations	**C1**–type	Pole crop of the identified valuable species and old plantations; suitable for retention as future crop, having density 0.4 or more.	**1** hectare
	C2- type	Old and dense teak plantations.	
Well-stocked area	**D**–type	Areas having density 0.4 and over	**5** hectare
Forest blanks	**E**–type	Forest blanks	**5** hectare

B.4.2. The treatment maps should also show adequate regeneration areas in the D-type; and areas suitable for planting bamboo, teak and mixed species in the B2- type and E-type. Natural regeneration would be considered adequate if at least 400 saplings per hectare are present. The same criteria will be applied for the rootstock, and used for defining the B1-type. Old and dense teak plantations will be included in the C2-type. Scheduled cleaning and thinning operations are expected in such areas. The sixth-year cleaning and eleventh-year, seventeenth-year, twenty-fifth-year and thirty-fifth-year thinning operations have been prescribed in such areas.

Table B.3. Harvesting size, proportion and treatment prescribed in this plan

Salient features	Standard	Applicable to working circles
1. Felling cycle	20 years	Selection-cum-Improvement, Improvement, Afforestation and Protection
2. Yield regulation	By area	Selection-cum-Improvement
3. Harvestable girth		
▪ Teak Site quality IV	120 cm.	Selection-cum-Improvement and Improvement
▪ Teak Site quality III	145 cm.	Selection-cum-Improvement and Improvement
▪ Teak Site quality II	160 cm.	Selection-cum-Improvement and Improvement
▪ Ain and Bija	135 cm.	Selection-cum-Improvement and Improvement
▪ Garari and Lendia	30 cm.	Selection-cum-Improvement and Improvement
▪ Other Group 3 species	90 cm.	Selection-cum-Improvement; and Only Dhaora in the Improvement Working Circle
4. Harvesting proportion		
▪ Teak and Groups 3 species	50%	Selection-cum-Improvement and Improvement
▪ Ain, Bija, Garari and Lendia	80%	Selection-cum-Improvement and Improvement

Table B.4. Tabular Summary of Treatments Prescribed

Treatment prescriptions	**Working Circles**			
(Y denotes **prescribed)**	**SCI**	**IMP**	**AFF**	**PRT**
	SCI	Improvement	Afforestation	Protection
Common Treatment (excluding A-Type area)				
1. Soil and moisture conservation				
▪ Contour trenching	**Y**	**Y**	**Y**	No
▪ Gully plugging: loose rubble, earthen or brushwood	**Y**	**Y**	**Y**	**Y**
▪ Planting agave, Khus, etc., on contour trenches	**Y**	**Y**	**Y**	No
▪ Seed sowing on contour trenches: Late May	**Y**	**Y**	**Y**	No
2. Dressing high stumps	**Y**	**Y**	**Y**	**Y**
3. Singling of coppice shoots	**Y**	**Y**	**Y**	Part
4. Coppicing damaged and malformed saplings	**Y**	**Y**	**Y**	No
5. Retaining down logs, den and snag trees	**Y**	**Y**	**Y**	**Y**
6. 6th year cleaning	**Y**	**Y**	**Y**	Part
7. Climber cutting and shrub clearance	**Y**	**Y**	**Y**	No
8. Control data: May-June and February–March	**Y**	**Y**	**Y**	**Y**
9. Bamboo cleaning (outside Bamboo Working Circle)	**Y**	**Y**	**Y**	Part
Treatment in A-Type areas				
1. Bush sowing of local species	**Y**	**Y**	**Y**	**Y**
2. Gully plugging in the A3 and the A2 areas	**Y**	**Y**	**Y**	Part
3. Harvesting marketable down logs	**Y**	**Y**	**Y**	**Y**
4. Stake planting in A3	**Y**	**Y**	**Y**	**Y**
Treatment in B-Type areas				
1. Rootstock management				
▪ Scrape weeding: July	**Y**	**Y**	**Y**	Part
▪ Soil working & mulching: October	**Y**	**Y**	**Y**	Part
▪ Scrape weeding: CBO {2nd} year – August	**Y**	**Y**	**Y**	Part
▪ Soil working & mulching: 2nd year – October	**Y**	**Y**	**Y**	Part
▪ Singling coppice shoots: 3rd year	**Y**	**Y**	**Y**	Part
▪ Climber cutting & shrub clearance: 3rd year	**Y**	**Y**	**Y**	Part
▪ Coppicing damaged saplings: 3rd year	**Y**	**Y**	**Y**	Part
2. Plantations in B2 (Table B.5)	**Y**	**Y**	**Y**	**Y**
Treatment in C-Type areas				
1. Thinning of pole crop and old plantations	**Y**	**Y**	**Y**	No
2. Cutback operation in the following year	**Y**	**Y**	**Y**	**Y**

Treatment prescriptions	**Working Circles**			
(Y denotes **prescribed)**	**SCI**	**IMP**	**AFF**	**PRT**
Treatment in D-Type areas				
1. Enumeration of trees having harvestable girth	**Y**	**Y**	No	No
2. Harvesting of mature trees	**Y**	**Y**	No	No
3. B-grade thinning in congested patches	**Y**	**Y**	**Y**	No
4. Tending of natural regeneration (soil working)				
▪ Scrape weeding: July	**Y**	**Y**	**Y**	Part
▪ Soil working & mulching: October	**Y**	**Y**	**Y**	Part
▪ Scrape weeding: CBO {2nd} year – August	**Y**	**Y**	**Y**	Part
▪ Soil working & mulching: 2nd year – October	**Y**	**Y**	**Y**	Part
▪ Singling coppice shoots: 3rd year	**Y**	**Y**	**Y**	Part
▪ Climber cutting & shrub clearance: 3rd year	**Y**	**Y**	**Y**	Part
▪ Coppicing damaged saplings: 3rd year	**Y**	**Y**	**Y**	Part
5. Cutback operation in the following year	**Y**	**Y**	No	No
Treatment in E-Type areas				
1. Plantation (Table B.5)	**Y**	**Y**	**Y**	**Y**

Table B.5. Plantation prescriptions

Plantation prescriptions	**Working Circles**			
(Y denotes **prescribed)**	**SCI**	**IMP**	**AFF**	**PRT**
	SCI	Improvement	Afforestation	Protection
1. Fencing: TCM, live hedge or other designs	**Y**	**Y**	**Y**	**Y**
Single stage plantation				
2. PPO/PYO (Pre-planting operations)	**Y**	**Y**		
3. FYO (First year operations): CBO {2nd} year	**Y**	**Y**		
4. SYO (Second year operations): 3rd year	**Y**	**Y**		
5. TYO (Third year operations): 4th year	**Y**	**Y**		
6. 4thYO (Fourth year operations): 5th year	**Y**	**Y**		
7. 5thYO (Fifth year operations)	**Y**	**Y**		
8. Cleaning in the plantation: with 6thYO	**Y**	**Y**		
9. Sixth-year coupe cleaning: 6th year	**Y**	**Y**	**Y**	**Y**
10. Thinning in the plantations: 11th of plantation	**Y**	**Y**	**Y**	**Y**
Two stage plantation				
11. Fence ridge planting & seed sowing: 2nd year			**Y**	**Y**
12. Appraisal for the plantation suitability: 4th year			**Y**	**Y**
13. PPO/PYO (Pre-planting operations): 4th year			**Y**	**Y**
14. FYO (First year operations): 5th year			**Y**	**Y**
15. SYO (Second year operations): 6th year			**Y**	**Y**
16. TYO (Third year operations): 7th year			**Y**	**Y**
17. 4thYO (Fourth year operations): 8th year			**Y**	**Y**
18. 5thYO (Fifth year operations) and cleaning: 9th year			**Y**	**Y**

B.5. TREATMENT PRESCRIBED

B.5.1. Listing of treatments: The prescribed treatments have been summarised in Tables B.3 and B.4.

B.5.2. Tending of natural regeneration: All seedlings and saplings of valuable species more than 60 centimetres in height will be treated at par with planted seedlings inside the plantation area.

B.5.3. Valuable species for retention: Order of priority among desirable species will be Tiwas, Shisham, Haldu, Teak, Bija, Saja, Karam, Khair, Sewan, Kasai, Dhaora, Bhirra, Rohan, Mowai, Salai, Surya, Mokha, Dhaman, Bhilawa, Chichwa, Bhorsal, Lendia and Garari. Choice of species for plantations is described separately.

B.5.4. Choice of species for plantations: Valuable local species suitable for the site and favoured by the local village communities will be preferred in plantations. Teak, Shisham, Khair, Siwan, Siras, Chichwa, Aonla, Chinch, Neem and Sitaphal should be considered among the recommended species. Neem, Khair, Aonla, Chinch, Chichwa, Karanj, Siras and Sitaphal may be preferred in areas close to habitation. *Dabergia sissoo* (Sissoo) and *Euclayptus* are not local species, but may be used on suitable alluvial soil. Seedlings of edible fruit-yielding forest species may constitute up to one-fifth and seedlings of medicinal plants up to five percent of the stock. Two stakes per hectare of suitable species such as *Ficus* spp. should also be used in plantations. An officer not below the rank of Assistant Conservator of Forests should approve the final choice of species and source nurseries.

B.5.5. Spacing in plantations: Teak stumps from root-shoot cuttings should be planted on well-drained and suitably open sites. Teak seedlings in poly-pots or root trainer containers can be used in exceptional cases to be justified in the registers for the plantations. Teak stump and the mixed species plantations should be carried out at three-meter interval (3x3-meter spacing), and bamboo seedlings should be planted at six-meter interval (6x6-meter spacing).

B.5.6. Growing space for planted seedlings: Care should be taken to avoid planting of seedlings directly under the canopy of existing trees or established saplings.

B.5.7. Fencing: TCM, live-hedge and other mechanical fencing have been prescribed.

B.5.8. Pit digging: Cubic pits dug up will be of 30-cm sides for planting seedlings of non-teak species and 45-cm sides for bamboo planting.

B.5.9. First year operations: Two scrape weeding in July and August as well as soil working and mulching in October and January is prescribed in the first year. Stone mulching is prescribed in Bamboo plantation in place of the soil working.

B.5.10. Second year operations: The scrape weeding in August and the soil working and mulching in October are prescribed. Maintenance of the stone mulching will replace soil working in the bamboo plantations.

B.5.11. Third year operations: One weeding in the third year should be done along with the soil mulching in September. The weeding in bamboo plantations should include removal of stone mulch.

B.5.12. Cleaning in the sixth year has been prescribed.

B.5.13. Thinning: Thinning will be carried out in the eleventh-year of coupe working.

B.5.14. Cleaning and Thinning of old plantations: Cleaning and thinning in the young plantation will be carried out during the sixth and eleventh year, respectively, of plantations. Thinning in the dense teak plantations has been prescribed to be carried out in 11th, 17th, 25th and 35th year of plantation along with 6th year cleaning.

B.6. PRESCRIPTIONS FOR BAMBOO HARVESTING

B.6.1. Clump as units: Each clump is an independent entity for the treatment.

B.6.2. Harvestable clump size: No clump should be considered fit for harvesting unless it contains more than 12 (twelve) culms of one year or of older in age.

B.6.3. Immature culms: All current year and the previous year culms will be retained. Current year culms have the culm sheath on the lower half and abundant bloom (white powdery dust), which comes off easily when touched. Previous year culms do not have the culm sheath, and the patchy bloom does not come off easily. Older or mature culms have blackish-grey bloom.

B.6.4. Reserved culms: The mature culms, equal in number to the current year culms subject to minimum of eight, must be retained to provide support to the younger culms.

B.6.5. Restriction on irregular harvesting: The conditions for the irregular harvesting have been prescribed.

B.7. BAMBOO (OVERLAPPING) WORKING CIRCLE

B.7.1. The areas, where bamboo was noticed during the enumeration, have been included in the Bamboo (overlapping) Working Circle (BMB). Total BMB area is 32640.15 hectare in 148 compartments, out of which 30440.50 hectare is the Reserved Forests, 1216.17 hectares of the Protected Forests and 983.5 hectares of unclassified forests.

B.7.2. Cutting cycle and sequence of cutting: Three-year cutting cycle will continue for the bamboo harvesting, and A, B and C coupes in the cyclic order will serve as annual coupes in each cutting series. The sequence of cutting is given in the appendix 16.2.

B.8. NON-WOOD FOREST PRODUCE (OVERLAPPING) WORKING CIRCLE

B.8.1. Special objects of management: Sustainable management of the marketable NWFPs and reasonable returns to the villagers especially the tribal communities are objectives of management for this working circle.

B.8.2. Modifications according to the legal provisions: Since legal provisions are not very explicit, it is recommended that treatments prescribed be modified according to the legal directives issued by the state government from time to time.

B.8.3. Fire protection measures have been prescribed

B.8.4. Documentation of NWFP collection has been proposed in the plan.

B.9. JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

B.9.1. This working circle would endeavour to generate and sustain the participatory forest management through the JFM program. Instead of considering JFM program as a scheme, it should be considered as the approach of forest administration. Its participatory approach should be widely applied even at places, where formal JFM committees have not been constituted.

B.9.2. The forest areas under Afforestation Working Circle are the potential JFM areas. Similarly, areas of the Miscellaneous Working Circle found suitable for the afforestation prescriptions should also be covered under the JFM Program. Forest under the Improvement and the Selection Working Circles can be included in the JFM areas in exceptional circumstances.

B.10. THE WILDLIFE (OVERLAPPING) WORKING CIRCLE

B.10.1. The special object of management to conserve biodiversity, and water hole development etc has been prescribed.

B.11. MISCELLANEOUS WORKING CIRCLE

B.11.1. The Miscellaneous Working Circle (MIS) covers all the forest areas not included in any other working circles. Stress will remain on the database preparation. Areas diverted for the compensatory afforestation, or otherwise, will be treated according to the prescriptions of the Afforestation Working Circle. The Conservator of Forests will approve the schedules of operations.

B.12. MISCELLANEOUS REGULATIONS

B.12.1. Demarcation and Protection: Forest areas vulnerable to boundary obliteration need to be identified for survey and demarcation so that forest encroachment on the forest fringes could be detected promptly. Presence of boundary marks also serves as psychological barrier against the forest encroachment.

B.12.2. The gaps in the land records such as incomplete disforestation maps or unavailability of the authentic forest maps should be closed as soon as possible.

B.12.3. Demarcation of the external forest boundaries: The entire area shall be tackled during the ten-year plan period. The external boundaries will be demarcated with cement-concrete pillars or stone slabs at bends and corners of the artificial boundaries immediately after the boundary survey.

B.12.4. Demarcation of the internal forest boundaries: Internal boundaries between compartments or those between the Reserved and the Protected Forests may be demarcated using traditional stone cairn, earthen cairn or standard wooden pillar. Fund allocation for this work is generally discouraged because it is a part of the responsibilities entrusted to the protection staff.

B.12.5. Plantation Guidelines and Soil conservation: Plantation guidelines and soil conservation have been prescribed.

B.12.6. Forest Protection: A number of suggestions have been made for the forest protection.

B.13. DEVIATION, CONTROL AND RECORDS

B.13.1. Procedure for preparation and processing of deviation proposal has been prescribed.

B.13.2. To monitor and control the various operations Control Forms, Maps and other permanent Records have been prescribed.

B.14. FINANCIAL FORECAST

B.14.1. An estimate for the annual expenditure and revenue has been made in the plan.

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