

EXECUTIVE SUMMARY
ALONG WITH CONSTRAINS FACED
DURING WRITTING OF THE
MANAGEMENT PLAN



WEST CHANDA FOREST PROJECT
DIVISION, CHANDRAPUR

PERIOD OF PLAN:
2016-2017 TO 2025-26

1. GENERAL:-

FOREST AREA DETAILS

- Area transferred Vide PCCF letter no. Desk-14/WP/88/1995-96 Dated 14.6.1995 is 36480.520 ha.
- Area handed over to Tadoba-Andhari Tiger Reserve 12550.580 ha. as Buffer Zone vide G.R. No. FDC.20/PNO.63/F-5/Mantralaya, Mumbai, Dt. 13 June 2014
- Area handed over to Chandrapur Forest Division of 325.360 ha. vide G.R. No. FDC-2015/PNO. 202/F-5, dated 1st sept. 2015
- Chandrapur Forest Division Area handed over to 292.350 ha Forest Project Div. West Chanda vide G.R. No. FDC-2015/PNO. 202/F-5, dated 1st sept. 2015
- Present total area of this forest project division is 23896.930 ha.

2. THE TOTAL AREA OF MANAGEMENT PLAN

- Total Area Covered : 23896.930
- Period of plan : 2016-17 to 2025-26
- Total No. of Ranges : 4
- Total No. of Rounds : 10
- Total No. of Beats : 21
- Total No. of Compartments : 75

3. OBJECTIVES MANAGEMENT OF MANAGEMENT PLAN:

The National Forest policy of 1988 has been the guiding principal to decide the general objects of management and these are mentioned here under.

- (i) To preserve forest cover on steep hill slopes, along the nala banks and water courses and to prevent soil erosion.
- (ii) To enrich the growing stock in the natural forests and to restock all the under stocked and degraded forests, to achieve normality of growing stock in shortest possible time.
- (iii) To increase the productivity of forests by using improved technology and to maintain the same on sustained yield basis.

- (iv) To meet the requirement of small timber, fuelwood, fodder and minor forest produce of the rural and tribal population on top priority.
- (v) To increase the production of minor forest produce and to manage the same scientifically to utilize the potential to the maximum possible extent on sustained basis.
- (vi) To conserve and protect wildlife.

4. THE FOREST

- ❖ According to classification of forest types by Sir H.G. Champion and Shri. S.K.Seth belongs to 5A/C₃. Southern Dry mixed Deciduous forests

Predominant Species - Teak, Ain, Bija, Dhawada, Lendia, Garadi, tendu, Salai, Mowai, Moha, Kalam, Khair, Bamboo etc.

5. PAST SYSTEM OF MANAGEMENT:-

The Management Plan for the West Chanda Forest Project Division was prepared by Sau. Neena Khandekar, the Divisional Manager for the period 2006-07 to 2015-16 and implemented. Total area of 36480.520 ha was allocated to following working circles.

❑ **Working plan of Sau. Neena Khandekar (2006-07 to 2015-16)**

Entire area was divided into six working circles as per details given below.

S.N	Name of the Working circle	Area (in ha)	% of Total Area
1	Teak Plantation Management Working Circle	7772.393	21.30
2	Teak Plantation Working Circle	4918.919	13.48
3	Improvement Working Circle	14337.041	39.30
4	Afforestation Working Circle	8334.525	22.85
5	Miscellaneous Working Circle	1117.642	3.07
6	Bamboo Production (over lapping) Working Circle	18470.395	50.63
	Total	36480.520	100.00

6. TEAK PLANTATION MANAGEMENT WORKING CIRCLE

- A) Established Teak Plantations raised between period 1950 to 1969 by the Forest Department and teak plantations raised between period 1970 and 1987 by the FDCM Ltd are included in this working circle. These Plantations have been raised after clear felling the existing over wood and the extent of area of such plantation is **7162.893 ha**.
- B) Established Teak plantation between period 1988 to 1997 under different schemes like wasteland development (Bankable) Project phase I, enrichment plantation under Maharashtra Forestry Project & EGS to the extent of 609.500 ha are also included under this working circle. These plantations have been raised without removal of over wood. The extent of such plantation is **609.500 ha**.

Thus, the total area of this working circle is **7772.393 ha**. The distribution of which in various ranges are given as under.

Special objects of Management.

- To carry out tending operations to produce good quality and big size teak timber.
- To get intermediate yield and revenue.
- To carry out thinning as per the yield table on the basis of age and site quality.
- To improve the crop by carrying out required silvicultural operations so as to achieve growth parameters comparable to those in the yield table.
- To obtain maximum sustained yield of teak timber of commercial value.

7. TEAK PLANTATION WORKING CIRCLE

i) Teak Plantation Working Circle

Following areas have been included in this working circle.

- (A) Un-tackled areas of miscellaneous natural forests where site & soil conditions are suitable for raising teak plantation after removal of overwood are also included in this working circle. The extent of such area is **2701.000 ha**.
- (B) Failure teak plantations and miscellaneous plantations which have failed due to human failure and natural calamities. Otherwise these

areas are potentially fit for raising teak plantations and hence included in this working circle. The extent of such area is **1118.90 ha.**

- (C) Teak plantations raised from 2002 onwards that require tending operations. Area under this category is **1099.019 ha.**

Thus the total area included in this working circle is **4918.919 ha.**

Objects of Management.

- To enhance productivity of the area by converting less valuable forest into valuable Teak stand by following improved technology.
- To convert existing uneven aged forest to even aged Teak forest.
- To provide employment to the local people in remote areas.

8. IMPROVEMENT WORKING CIRCLE

Following type of areas constitute the Improvement Working Circle –

(I) A Type areas: - Linear strips retained as natural surrounds of the earlier plantations that need proper tending and enrichment to enhance productivity. These areas have good soil cover. The extent of this area is - **1535.894 ha.**

(II) B Type areas:- Failure teak and miscellaneous plantation having natural regeneration and coppice regeneration of valuable species. Reasons of failure plantation are partly habitat factors. The soil cover is good but the crop is young to mature and further disturbance in the canopy is likely to have damaging effect. The extent of such areas is **7904.924 ha.**

(III) C Type areas: - Untackled blocks with good soil cover and having crop which is mostly middle aged to mature with density varying from 0.4 to 0.6 of natural regeneration of valuable miscellaneous species at few places. The extent of such areas is **4358.723 ha.**

(IV) D Type Areas: - Untackled blocks with ecologically sensitive areas such as areas with steep slopes, deeply eroded areas where any felling will have adverse impact. These areas are in different stages of degradation. Such areas are to the extent of **537.500 ha.**

Objects of Management:

- To improve the forest in terms of composition and density.
- To promote natural regeneration of various species.
- To maintain biodiversity.
- To remove dead, dying and diseased trees with a view to facilitate establishment of natural regeneration of important species.

9. AFFORESTATION WORKING CIRCLE

Tackled and untackled areas with density below 0.4 and, areas fit for plantation of miscellaneous species other than teak are included under this working circle. Successful miscellaneous plantations are also included in this working circle that needs further treatment. The following types of areas are included under this working circle

A type area: - Untackled areas with soil depth less than 30 cm with poor moisture content and have negligible tree cover and, degraded forest areas having tree density less than 0.4. The extent of such area is **3238.555 ha.**

B type area: - failure plantations areas with soil depth less than 30 cm and generally having degraded soil. Failure is noticed due to poor nutritional status of soil. The extent of such area is **3770.170 ha.**

C type area: - Miscellaneous plantations that require tending operations. The extent of such area is **1325.800 ha.**

The extent of area of the working circle is **8334.476 ha.**

Special objects of Management.

- To maintain the biological diversity of forests by introducing mixture of species & restore eco- balance.
- To check soil erosion and improve moisture regime.
- To reclaim the area by intensive soil and moisture conservation works and afforestation works to enhance the productivity through artificial regeneration consisting mainly the indigenous species of small timber, firewood and fodder value to meet the local demand

10. MISCELLANEOUS WORKING CIRCLE

The area which could not be covered in any working circles of this management plan, since the areas are diverted to other activities such as (1) building (2) roads (3) depot (4) nursery (5) water bodies (6) seed stands (7) seed orchards (8) seed production areas are included in miscellaneous working circle. The total area under this working circle is **1117.642 ha**

Objects of management.

- To maintain existing buildings, roads, Jungle and sale depots.
- The existing depots are maintained and will be expanded as per requirement and demand.
- Roads will be maintained for extraction of forest produce as well as for intensive patrolling of forest areas for effective protection.
- Culverts and small bridges will be maintained for effective communication.
- To collect quality Teak seed from seed production areas.

11. BAMBOO PRODUCTION (OVER LAPPING) WORKING CIRCLE

This working circle includes all the areas where bamboo, natural or planted, was silviculturally available for working.

This was an overlapping working circle and included following areas.

A. Naturally regenerated bamboo areas = 13149.000 ha.

B. Established successful Bamboo plantation areas = 5271.395 ha. Total area allocated to this working circle is 18420.395 ha.

12. WILD LIFE MANAGEMENT (OVER LAPPING) WORKING CIRCLE

Forest area of West Chanda Project Division is rich in flora and wild fauna. Following animals are commonly found in the area of the Division.

- i) Carnivora- Tiger, Panther, Hyaena, Wild dog, Wolf, Jackal, Fox and Jungle cat. The number of tigers and leopards recorded in West Chanda Forest Project Division during the last two

population estimations were carried out in May 2005 and in May 2015 is given below.

Species	Population estimation 2005	Population estimation 2015 (WCT)
Tiger	3	6
Leopard	5	8

- ii) Herbivora – Bison, Sambhar, Cheetal, Nilgai, Barking deer, Wild boar, Sloth bear, Four horned antelope and Chinkara.
- iii) Rodents- Three striped palm squirrel, Porcupine and Hare.
- iv) Wild Birds- Painted sand grouse, Common sand grouse, peafowl, Gray jungle fowl, Painted partridge, Gray partridge, Jungle bush quail, Black breasted quail, Indian bastard quail, Indian button quail, Red spur fowl, Crane, spotted bill duck, Pigeon, Dove, Cotton teal and Whistling teal.

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

13 . BASIS OF PROPOSALS

OBJECTIVES OF MANAGEMENT:

The National Forest Policy of 1988 and Maharashtra State Forest Policy of 2008 are the guiding principles to decide the general objects of management. The new policy has emphasized on the need for environmental stability and sustainable management of forests.

Working circle wise allocation of area :

Sr. No.	Name of Working Circle	Total area
1	Teak Plantation Management Working Circle	6694.545
2	Teak Plantation and Reboisement Working Circle	1444.280
3	Improvement Working Circle	10943.931
4	Afforestation Working Circle	3889.476
5	Protection working circle	303.278
6	Planting Stock Improvement Working Circle	53.00
7	Miscellaneous Working Circle	568.420
	Total	23896.930

8	Bamboo (overlapping) Working Circle A. Natural bamboo B. Plantation	12046.850
9	Wildlife management (overlapping) working circle	23896.930
10	Non Timber Forest Produce NTFP (overlapping)	23896.930
11	Soil and water resource management (overlapping)	23896.930

Table – working circle wise distribution of divisional area

The distribution of range wise and working circle wise area of West Chanda Forest Project Division is as under -

Sr. No.	Name of working circle	Range (Area in ha.)				
		Junona	Mamla	Chichpalli	Khadsangi	Total
1	Teak plantation Management working circle	3382.526	2030.824	1098.570	182.625	6694.545
2	Teak Plantation & Reboisement Working Circle	270.000	733.930	100.000	340.350	1444.280
3	Improvement Working Circle	4036.647	1402.696	3157.814	2346.774	10943.930
4	Afforestation Working Circle	428.800	97.550	2774.356	588.770	3889.476
5	Protection Working circle	25.347	91.000	22.000	164.931	303.278
6	Planting Stock Improvement Working Circle	0.000	53.000	0.000	0.000	53.000
7	Miscellaneous Working Circle	166.000	90.500	50.000	261.920	568.420
	Total					23896.930
8	Bamboo (overlapping) Working Circle A. Natural bamboo B. Plantation	3824.000 421.000	1895.000 742.000	3435.000 1669.850	0.000 60.000	9154.000 2892.850
9	Wildlife management (overlapping) working circle	8309.320	4499.500	7202.740	3885.370	23896.930

10	Non Timber Forest Produce NTFP (overlapping) working circle	8309.320	4499.500	7202.740	3885.370	23896.930
11	Soil and water resource management (overlapping) working circle	8309.320	4499.500	7202.740	3885.370	23896.930

14. TEAK PLANTATION MANAGEMENT WORKING CIRCLE

➤ **Successful Teak Plantations :**

- 1) Established teak plantations of FD & FDCM 5058.146 ha
- 2) Teak plantations raised from 1988 to 1997 of FDCM 213.500 ha
- 3) Teak plantations raised from 2002 to 2014 of FDCM 1422.899 ha

Total : 6694.545 ha

Successful teak plantations proposed under Teak Plantation Management Working Circle is **6694.545** Ha. rangewise distribution is as under -

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	3382.526	8309.320	40.707	14.154
2	Mamla	2030.824	4499.500	45.134	8.498
3	Chichpalli	1098.570	7202.740	15.250	4.597
4	Khadsangi	182.625	3885.370	4.700	0.764
	Total	6694.545	23896.930		

SPECIAL OBJECTIVES OF MANAGEMENT

- ❖ To carry out thinning as per the yield table on the basis of age and site quality.
- ❖ To carry out tending operations to produce good quality teak timber.
- ❖ To improve the crop by carrying out required silvicultural

operations so as to achieve growth parameters comparable to those in the yield table.

- ❖ To obtain maximum sustained yield of teak timber of commercial value.
- ❖ To get intermittent yield and revenue.
- ❖ To meet the market demand of poles, small timber and firewood.

METHOD OF TREATMENT.

- Thinning in Teak Plantation done as per Managing Director letter no. PLN/05/F-III/2874, Nagpur Dated 02.09.1999 as per revised instructions.
- First thinning - 10th year.
- Second thinning - 15th year.
- Third and subsequent thinning – 5 years interval
- Thinning is Based on Site quality, Basal area and Stand table retention number per hectare.
- Yield and Stand table compiled by Shri.Tasneem Ahmed, IFS is used for deciding removal of stand.

ROTATION

- The Rotation of Teak in F.D.C.M. Ltd. is fixed at 80 years vide Managing Director's letter No. PLN/11/2004-05/984 Nagpur dated 2.6.2004

SUBSIDIARY SILVICUTURAL OPERATIONS

- i) Removal of wind fallen trees from all over the areas irrespective of the thinning schedule.
- ii) Worked area will be fire traced and protected from fire.
- iii) Felling of all badly damaged or broken trees.
- iv) Removal of dead trees and also the high stumps. Two dead trees per hectare are retained which will be act as snag for wildlife.
- v) Cutting back of malformed advance growth of teak.
- vi) First thinning will be carried out during 10th year of planting. The second and subsidiary thinning will be carried out at five years interval.

15. TEAK PLANTATION AND REBOISEMENT WORKING CIRCLE

- A type - Un-tackled areas of Misc. natural forest where site & soil conditions are suitable for raising Teak Plantation. Total area: - **500.000 Ha.**
- B type – Failure Teak plantation and Misc. plantation, other wise these areas area potentially fit for raising teak plantations. Total area: - **858.930 Ha.**
- C Type Failure Teak plantations which are raised from 2002-2015. Total area: - **85.350 Ha.**

Thus the total area of this working circle is **1444.280 ha.**

Distribution of areas allotted to this working circle, into various Ranges are as under.

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	270.000	8309.320	3.249	1.129
2	Mamla	733.930	4499.500	16.311	3.071
3	Chichpalli	100.000	7202.740	1.388	0.418
4	Khadsangi	340.350	3885.370	8.759	1.424
	Total	1444.280	23896.930		

Method of Treatment

- All young to middle aged fruit bearing trees of 30 to 90 cm girth up to 20 trees per ha. shall be retained
- Young to middle age trees of girth 30 to 60cm of Semal, Khair, Rosewood and other superior misc. & medicinal plant species up to 20 trees per ha. uniformly spread over the areas should be retained.
- No felling should be done on either side of Nalas, Streams, River banks up to a distance of 5 meters
- The section size should not exceed 20 ha.
- 5 meter wide strip of natural forest should be retained on all sides of the section

- Improved planting stock from known source should be used in order to increase the productivity of the area

REBOISEMENT OF FAILURE TEAK PLANTATION

- Method of treatment will be the same as above.
- Cutback of existing growth and artificial regeneration with genetically superior stock.
- The works to be executed before felling
- Method of planting and maintenance
- After removal of over wood, the unwanted growth will be cut and burnt.
- Planting will be done by teak stump at the spacement of 2 mtr. x 2 mtr.
- Three weeding with two soil working in 1st year, two weeding with one soil working in 2nd year and one weeding with soil working in 3rd year will be carried out.
- Casualty replacement in the first year and second year will be carried out by root trainer seedlings
- Watch and ward upto fifth year of planting.

SUBSIDIARY SILVICULTURAL OPERATIONS

Following operations will be carried out –

- ✓ Cleaning operations will be carried out during 4th and 7th year as per the standard instructions.
- ✓ Wind fallen material will be removed irrespective of the thinning schedule.
- ✓ Effective fire protections measures will be adopted in plantation. It will also be done in other worked coupes.
- ✓ The area planted will be closed for grazing for 5 years

ASSOCIATED REGULATIONS AND MEASURES

- ✓ Protection from fire and grazing: - The success of the prescription of this working circle will depend upon the protection of all areas from fire and control on grazing. The area will be protected from illicit felling and encroachment.

16. IMPROVEMENT WORKING CIRCLE

Area of this Working circle includes –

- A type - Area of linear strips retained as natural surround of earlier plantation. Total area – **1133.663 ha.**
- B type – Failure teak and misc. plantation having natural regeneration and coppice regeneration of valuable species. Total area – **6020.963 ha.**
- C type – Untackled blocks with good soil cover and having crop middle age to mature. Density varying from 0.4 to 0.6. Total area – **3789.305 ha.**

Distribution of area in this working circle is **10943.930 ha.**

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	4036.647	8309.320	48.579	16.891
2	Mamla	1402.696	4499.500	31.174	5.869
3	Chichpalli	3157.814	7202.740	43.841	13.214
4	Khadsangi	2346.774	3885.370	60.400	9.820
	Total	10943.930	23896.930		

SPECIAL OBJECTIVES OF MANAGEMENT:-

- To improve the forest in terms of composition and density.
- To promote natural regeneration of various species.
- To maintain biodiversity.
- To remove dead, dying, diseased and silviculturally available over mature trees with a view to facilitate establishment of natural regeneration of important species leaving 2 dead trees per /ha. as snag for wildlife.
- To meet the demand and Nistar of the local population.

HARVESTABLE GIRTH

- The following table shows the harvestable girth of different species, according to its site quality.

Species	Teak (<i>Tectona grandis</i>)				
	II	II/III	III	III/IV	IV
Teak harvestable	135	120	105	90	75
Groups	Miscellaneous species				
A: Ain, Bija, Haldu,	165	150	135	120	105
B: Others	150	135	120	105	90
C: Lendia, Garadi	45	45	45	45	45
D: Khair	75	75	75	75	

METHOD OF TREATMENT

Demarcation: - Demarcation will be carried out one year in advance.

Treatment map: - After demarcation, the treatment map will be prepared indicating the following type of areas.

Marking technique: - Marking will be done as per the standard demarcation rules.

A. Protection area – No marking for felling will be done.

B. Under-stocked area –

- i) All dead, diseased and wind fallen trees will be marked. Two dead trees per ha. retained for wild life.
- ii) All dead and live stump will be cut as close to the ground as possible and dressed.
- iii) All coppice shoots of valuable species except one vigorously growing shoot per stool will be marked.
- iv) Malformed seedlings to be cut back flush to the ground.

C. well-stocked area –

- i) All dead, diseased and wind fallen trees will be marked. Two dead trees per ha. retained for wild life.
- ii) All over mature trees above harvestable girth for particular species and site quality will be marked if they are silviculturally available.
- iii) All dead and live stumps will be cut.
- iv) All coppice shoots of valuable species except one vigorously growing shoot per stool will be marked.
- v) Malformed seedlings to be cut back flush to the ground.

SUBSIDIARY SILVICULTURAL OPERATIONS

- ✓ All climbers will be cut. Inferior growth interfering with regeneration of teak or other important miscellaneous species will be cut back.
- ✓ All left over high stumps marked for felling will be felled.
- ✓ Soil and moisture conservation works will be carried out as per site requirement.
- ✓ Worked area will be fire traced and protected from fire.
- ✓ Cutting back of malformed advance growth of teak.
- ✓ Worked area will be closed for grazing for minimum five years

ASSOCIATED REGULATIONS AND MEASURES

- ✓ Protection from fire and grazing: - The success of the prescription of this working circle will depend upon the protection of all areas from fire and control on grazing. The area will be protected from illicit felling and encroachment.

17. AFFORESTATION WORKING CIRCLE

A type area: -

Untackled areas with soil depth less than 30 cm with poor moisture content and have negligible tree cover and degraded forest areas having tree density less than 0.4. The extent of such area is **1115.150 ha.**

B type area: -

Failure plantations areas with soil depth less than 30 cm and generally having degraded soil. Failure is noticed due to poor nutritional status of soil. The extent of such area is **1619.830 ha.**

C type area: -

Miscellaneous plantations that require tending operations. The extent of such area is **1154.496 ha.**

The extent of area of the working circle is **3889.476 ha.**

The distribution of area allocated to this working circle into various Ranges are as under.

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	428.800	8309.320	5.160	1.794
2	Mamla	97.550	4499.500	2.168	0.408
3	Chichpalli	2774.356	7202.740	38.51	11.609
4	Khadsangi	588.770	3885.370	15.153	2.463
	Total	3889.476	23896.930		

SPECIAL OBJECTIVES OF MANAGEMENT

- To maintain the biological diversity of forests by introducing mixture of species and to restore eco-balance.
- To enhance the productivity of the forest land.
- To improve moisture regime and check soil erosion.
- To reclaim the area by soil and moisture conservation works and undertake afforestation works through indigenous species of small timber, firewood and fodder value to meet the local demand.

METHOD OF TREATMENT

Demarcation of coupe: Coupe shall be demarcated as per the standard procedure given in miscellaneous regulations.

Treatment map: -

- Untackled area with soil depth less than 30 cm
- Failure plantation areas
- Miscellaneous plantation requiring tending operations.

Method of marking:-

- All dead, diseased and wind fallen trees will be marked for felling.
- All dead and live stumps will be marked and cut as close to the ground as possible and dressed. Two dead trees per ha. retained for wild life.
- Crooked, malformed and hallowed rooted stock will be marked for cutting back.
- All coppice shoots of valuable species except one vigorously growing shoot per stool will be marked.

vi) Meadow development will be done to support the wildlife potential.

SUBSIDIARY SILVICULTURAL OPERATIONS

- Wind fallen material, dead trees will be removed irrespective of schedule prescribed from all over the area allocated to this working circle.
- Soil and moisture conservation works will be carried out as per site requirement.
- Cleaning and thinning operation will be done in successful plantations as per crop requirement.
- Climbers will be cut.
- Effective fire protection measures will be adopted in plantation as well as worked areas.

The worked area will be closed for grazing for minimum period of five years.

CHOICE OF SPECIES

- Suitable local species of timber, medicinal value, NTFP as per the site requirement
- Bamboo plantation shall be taken on suitable land
- *Bambusa balcooa* shall be planted in open patches where soil is suitable and irrigation facility is available.
- Teak plantation shall be considered in areas with crown density less than 0.2 and where soil is suitable.

ASSOCIATED REGULATIONS AND MEASURES

- Protection from fire and grazing: - The success of the prescription of this working circle will depend upon the protection of all areas from fire and control on grazing. The area will be protected from illicit felling and encroachment.

18. PROTECTION WORKING CIRCLE

- This working circle includes all the forest area that are situated on the hilly slopes, where it is not advisable to carry out the felling of green trees.
- DISTRIBUTION OF AREA – 303.278 ha.

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	25.347	8309.320	0.31	0.11
2	Mamla	91.000	4499.500	2.02	0.38
3	Chichpalli	22.000	7202.740	0.31	0.09
4	Khadsangi	164.931	3885.370	4.24	0.69
	Total	303.278	23896.930		

SPECIAL OBJECTS OF MANAGEMENT:

- To protect the available crop from any further deterioration
- To reclaim this area by adequate soil and moisture conservation works along with seed sowing.
- To protect vegetative cover along the Nala and river banks and to minimize further erosion and to keep forest belt intact around water bodies.

METHOD OF TREATMENT:

- No harvesting works.
- Area completely protected from fire grazing & illicit cutting.
- Soil & moisture conservation works, gully plugging.
- Seed sowing of Neem, Khair, Babul.

METHOD OF WORKING:

- The area will be divided in annual coupes.
- Treatment map will be prepared showing nala, water bodies, hilly and eroded area
- As per topography soil, moisture and water conservation works like CCT, Nala Bund and seed sowing on CCT work will be carried out as per annually.

SUBSIDIARY SILVICULTURAL OPERATION

- ❖ Intensive soil & moisture conservation works.
- ❖ Protection from fire.
- ❖ Closed for grazing for five years.

OTHER REGULATION

- ❖ Area will be protected from fire. The worked area will be closed for grazing for five years period.
The area will be protected from illicit felling and encroachment.

19. PLANTING STOCK IMPROVEMENT WORKING CIRCLE

- This working circle includes Seed Stands, Seed Production Areas & Seed Orchards including seedling seed orchards and clonal seed orchards mainly of Teak.
- DISTRIBUTION OF TOTAL AREA – **53.000 ha.**

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	0.000	8309.320	0	0
2	Mamla	53.000	4499.500	1.17	0.22
3	Chichpalli	0.000	7202.740	0	0
4	Khadsangi	0.000	3885.370	0	0
	Total	53.000	23896.930		

SPECIAL OBJECTS OF MANAGEMENT:

The primary object of management of this area is to supply quality seeds for the plantation activities in the forestry sector. The main objective of teak improvement programme is to produce seed for superior timber quality, fast growth & higher disease resistance by selection and breeding technology.

METHOD OF TREATMENT:

- Fixing of sign Board at the site.
- Cleaning.
- Application of Bordeaux mixture to seed bearers.
- Soil and moisture conservation works.

- Measurement of girth & height in TSOs every year up to fifth year and every five years thereafter i.e. 10th, 15th year & so on.
- Recording of flowering and fruiting every year
- Fire protection works.
- Watch and ward
- Thinning of seed area every five years (as per thinning schedule & prescriptions.

METHOD OF WORKING:

Thinning (culling/rouging) in the seed plots of SS & SPA will be carried out along with the regular thinning of the project division. The marking operations will be in consultation with the seed unit staff. Dead, dying, diseased, malformed & species other than seed bearers shall be gradually removed.

SUBSIDIARY SILVICULTURAL OPERATION

- ❖ Intensive soil & moisture conservation works.
- ❖ Protection from fire.
- ❖ Closed for grazing for five years.

OTHER REGULATION

The success of the prescriptions of this working circle will depend upon the protection of all areas from fire and grazing. The working circle areas will be specifically protected from illicit cutting.

20. MISCELLANEOUS WORKING CIRCLE

- ❖ Areas which are diverted to other activities such as water bodies, Roads, Buildings, Sale Depot and Nursery.

DISTRIBUTION OF TOTAL AREA: 568.420 ha.

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	166.000	8309.320	1.99	0.694
2	Mamla	90.500	4499.500	2.011	0.378

3	Chichpalli	50.000	7202.740	0.69	0.209
4	Khadsangi	261.920	3885.370	6.74	1.096
	Total	568.420	23896.930		

SPECIAL OBJECTIVES OF MANAGEMENT

- a) To maintain existing building, roads, sale and jungle depots
- b) The existing depots are maintained and will be expanded as per requirement and demand.
- c) Roads will be maintained for extraction of forest produce as well as for intensive patrolling of forest area for effective protection.
- d) To collect superior quality seeds for better progeny.
- e) To produce improved variety of planting stock.
- f) To raise teak stumps in teak bed nursery and to supply quality planting stock in the form of root shoots.
- g) To raise quality root trainer seedling in root trainer nursery.

ANALYSIS OF THE CROP

The areas allotted to this working circle for roads, buildings, water bodies, depots, nursery etc and not having any vegetation except for plantations existing in vicinity of depot, building etc and seed production areas. The seed production areas are having good tree growth. The trees are usually of middle aged having maximum reproductive activity.

METHOD OF TREATMENT

Choice of species – Planting in building areas and depot areas and along the roads will be done with the species of aesthetic importance.

Following operations will be carried out for nursery areas and seed producing areas as well as seed stand areas.

- In already established nurseries, seedlings will be produced as per requirement.

- If the target of plantation is enhanced, the area of existing nursery will be extended. New suitable nursery sites will be selected in the forest area for raising requires plants.
- All the proposed and established “seed plot areas” and seed stands will be permanently demarcated.
- Seed collection will be done every year.

21. BAMBOO (OVER LAPPING) WORKING CIRCLE

A) NATURAL BAMBOO

B) All Natural Bamboo bearing area which is capable of giving marketable bamboo.

DISTRIBUTION OF AREA: 9154.000 ha.

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the division
1	Junona	3824.000	8309.320	46.020	16.002
2	Mamla	1895.000	4499.500	42.115	7.929
3	Chichpalli	3435.000	7202.740	47.690	14.374
4	Khadsangi	0	3885.370	0	0
	Total	9154.000	23896.930		

B) BAMBOO PLANTATION

- Established bamboo plantation which are capable of giving marketable bamboo.

DISTRIBUTION OF AREA: 2892.850 ha.

S.N.	Name of The Range	Area of the W.C. (in ha)	Total area of the range	% of the area of the Range	% of the area of the Division
1	Junona	421.000	8309.320	5.06	1.76
2	Mamla	742.000	4499.500	16.490	3.105

3	Chichpalli	1669.850	7202.740	23.183	6.987
4	Khadsangi	60.000	3885.370	1.544	0.251
	Total	2892.850	23896.930		

OBJECTIVES

- To enhance the productivity of bamboo
- To sustainably harvest bamboo area following established silviculture rule.
- To meet the local market demand by regular harvesting of bamboos.

CUTTING CYCLE

- Cutting cycle of bamboo is a 3 year felling series divided in three coupes VIZ A, B, C One coupe will be worked annually.

BAMBOO CUTTING RULES

- No harvesting works should be permitted between 15th June to 30th September
- No Culm below the age of two years will be cut.
- All dead, decayed and dry bamboo shall be removed.
- Cutting height of Culm will be between 15 cm to 45 cm.
- Digging of rhizomes will be strictly prohibited.
- Use of tender bamboo Culm for bundling will be strictly prohibited.
- Cutting will start from the center of the clump towards the periphery.

METHOD OF TREATMENT

- Matured clumps will be harvested from 8th year of plantation.
- Clumps cleaning are prescribed as an integral part of Bamboo harvesting operations.
- Cutting cycle of three years duration.

SUBSIDIARY SILVICULTURAL OPERATIONS

- Climbers interfering with the growth of Bamboo clumps should be cut.
- The area will be protected from fire and grazing.

METHOD OF PLANTING

- *Dendrocalamus strictus* will be planted in 45 x 45 x 45 cm. pits size at the spacement of 5 x 5 m or 6 x 6 m.
- *Bambusa balcooa* will be planted in 45 x 45 x 45 cm. pits size at the spacement of 2.58 x 3 mtr. 1291 Bamboo plant per ha. where irrigation facilities are available
- Planting stock will be prepared in poly bags raised from one year old rhizomes.
- Plantation and Subsidiary work like weeding, soil mulching, application of fertilizer and watering will be done as per bamboo plantation scheme.
- The Bamboosa balcooa
- Micro propagation.
- Bamboo can be propagated by seeds, rhizome, culm cuttings and clump division.
- No. of plants / Hectare: 1240 plant.
- Spacing: 2.5 Mtr. between rows. The plants are planted at a distance of 3.00 Mtr. but on a triangular method in such a way that 3 Mtr. is there between two plants in the next row, as seen in the drawing.
- Planting : In the pit, mix the soil with 2 baskets (20 to 25 Kg) of FYM and 500gms of Neem cake. If the place is prone to termite, increase the Neem cake to 1 kg as basal application.

Irrigation

Provide life irrigation immediately after planting with 10 to 15 lit. of water. Drip irrigation along with fertigation tank is one of the good irrigation systems to get maximum yield.

22. WILDLIFE MANAGEMENT (OVER LAPPING) WORKING CIRCLE

- An overlapping working circle covering the entire area of the division total area 23896.930 Ha.
- West Chanda Forest Project Division is rich in wild life.
- Large Number of flora and fauna both in variety.