

PART-II

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER-I

BASIS OF PROPOSAL

NATIONAL FOREST POLICY, 1988:-

1.1 The forests have been bought to concurrent list from the state list with the effect of 42nd amendment to the constitution of India which enables Central Government to exercise more authority in forestry matters. This way clearly reflected in The National Forest Policy, 1988. The reasons for such changes were, inadequacy of protection measures, diversion of forest land for non forest purposes, tendency to maximum revenue realization, growing demand for timber, small wood and fodder. The Forest policy of 1988 envisages clearly that forests are to be managed mainly for preservation, maintenance, sustainable utilization, restoration and enhancement of natural environments.

1.1.1 The crux of National Forest policy is as follows:-

01. Maintenance of environmental equilibrium through preservation and restoration of ecological balance.
02. Conserving national heritage by preserving the remaining natural forests with the great variety of flora and fauna which represents commendable biodiversity and genetic resources of the country.
03. Preventing soil erosion and desiltation in the catchment areas of rivers, lakes, reservoirs through water and soil conservation measures in order to mitigate floods, droughts and siltation of reservoirs.
04. Substantial improvement in the forests and tree cover in the country through massive afforestation, social forestry programmes specially on denuded, degraded and unproductive lands.

05. Meeting the demands for fuel wood, minor forest produce, fodder and small timber of the rural and tribal population.
06. Increase the productivity of forest to meet essential needs of the nation.
07. Efficient utilization of forest produce by introducing modern techniques and maximum substitution of wood.
08. Ensuring massive people movement by crating awareness and involvement of all women for achieving these objects and to minimize the dependency on existing forests.
09. The basic emphasis of the Policy is on the management of existing forests and forest lands by protecting and increasing their productivity and conservation of total biological diversity by strengthening and improving network of National Parks, Sanctuaries, Biosphere reserve and other protected areas.

1.1.2 The Objects of National Forest Policy 1988 are as follows:-

01. Restrictions on schemes and projects which interfere with the forest that cover steep slopes, catchment of rivers, lakes and reservoirs.
02. No working of forests without approval of management plans by the Central Government.
03. Exotic species are not to be introduced without long term scientific trails.
04. The Rights and Concessions in grazing to be regulated by carrying capacity of the forests.
05. The Rights and Concessions of forest produce of the tribal should be protected and their domestic needs for fuel, fodder, non wood forest produce and small timber for construction should be provided on priority.
06. Forest Management Plans to take special care about wild life conservation.

07. Effective action to prevent encroachment on the forest land and the existing encroachments should not be regularized.
08. Forest based industries should raise raw material needed by them making arrangement from private cultivators without depending on forests.
09. Survey of forest resources shall be completed on scientific lines for updating information.

General Objects of Management

1.2 The general objects of management are:-

- (i) Maintenance, protection and amelioration of the forest cover and the environment,
- (ii) Conservation of soil, efficient harvest of water and regulates its supply,
- (iii) Meeting the bonafide requirement of the right-holder and Turees and making available required forest produce at reasonable price to local non-right holders,
- (iv) Rehabilitation of the degraded forests by local and indigenous species,
- (v) Improvement in the population of wild animals and their habitat,
- (vi) Effective fire control and,
- (vii) Consistent with the above, the surplus, if any, to feed the traditional market and wood based industries.

1.3 For attainment of above objectives, the following working circles have been proscribed.

- (a) Coppice with Standard Working Circle
- (b) Rehabilitation cum plantation working Circle.
- (c) Protection Management Overlapping Working Circle
- (d) NTFP overlapping Working Circle.
- (e) Bamboo Overlapping working circle.

(f) Khair Overlapping Working Circle

(g) Joint Forest Management Overlapping Working Circle.

(h) Wildlife Management Overlapping Working Circle.

Constitution and Distribution of Working Circles:-

(i) Coppice with Standard Working Circle:-

1.4 Forests which are fit to be regenerated satisfactorily from coppice system are proposed to be included in this working circle. Requirement of right holders will be fulfilled from annual felling of the coupes. Certain number of standard trees will be retained for ensuring the regeneration. Yield will be regulated by area.

Range wise distribution of forest areas under this working circle is given below

Sl.no.	Name of Range	Area (Hac.)
1	Balumath	10418.88
2	Chandwa	13013.05
3	Latehar	12457.75
4	Manika	12773.20
5	Richughuta	9349.24
	Total:-	58012.12

(ii) Rehabilitation Cum plantation Working Circle:-

1.5 Areas of rooted wastes, blanks and existing plantations are proposed to be incorporated in this working circle. The approach will be to treat the degraded areas by coppicing high stumps and fencing of areas to protect new shoots from grazing and trampling. The blanks areas in these forests will be planted from nursery raised stocks of economically important species. Preference will be given to local and indigenous species. Soil and

water conservation works will be undertaken to check erosion in these forest areas.

Range wise area distribution under this working circle is given below:-

Sl.no.	Name of Range	Area (Hac.)
1	Balumath	20690.08
2	Chandwa	15850.26
3	Latehar	16021.77
4	Manika	14077.68
5	Richughuta	4736.03
	Total:-	71375.82

(iii) Protection Management Overlapping Working Circle:-

1.6 This working circle is proposed for entire forest area of Latehar Forest Division. Problems of illegal felling, mining, encroachment, grazing and fire in this division will be addressed. Suitable measures to tackle these problems will be prescribed.

(iv) N T F P Overlapping Working Circle:-

1.7 This working circle overlaps the areas of other working circles. The objective will be to augment the yield of N T F P. Local inhabitants will be encouraged to collect N T F P by providing market linkages. This way their income will increase and so will their standards of living.

(v) Bamboo overlapping Working Circle:-

1.8 Bamboo bearing forest areas are allotted to this working circle. Existing bamboo clumps will be worked to induce Karils. Other areas where bamboo clumps have deteriorated due to heavy cutting by right holders and turees will be treated by artificial regeneration.

Range wise distribution of area is given as below:-

Sl.no.	Name of Range	Area (Hac.)
1	Balumath	717.26
2	Chandwa	857.70
3	Latehar	2112.97
4	Manika	215.04
5	Richughuta	4271.15
	Total:-	8174.12

(vi) Khair Overlapping Working Circle:-

1.9 This working circle overlaps other working circles. Forest areas having commercially exploitable number of Khair trees will be allotted to this working circle. The objective will be to obtain maximum sustained yield of khair trees and to aid young seedlings by suitable silvicultural operations.

Range wise distribution of area is given as below:-

Sl.no.	Name of Range	Area (Hac.)
1	Balumath	517.12
2	Chandwa	343.90
3	Latehar	1059.42
4	Manika	1410.59
5	Richughuta	-
	Total:-	3385.03

(vii) Joint Forest Management Overlapping Working Circle:-

1.10 This working circle covers the entire forest area of Division and overlaps the other working circles. The objective is to involve local people in protection and management of forests. The benefits may be shared between Government and VFMPSC as per resolution adopted by Government of Jharkhand.

(viii) Wildlife Management Overlapping Working Circle:-

1.11 This working circle includes the entire forest area of Latehar Forest Division. Under this working circle it is proposed to protect and conserve biodiversity of Latehar Forest Division. Special measures will be provided to protect the rare and endangered species.

Blocks and Compartments:-

1.12 No block or Compartment has been constituted for these forests. Forest areas in each village have been delineated by boundary pillars on the ground and the same has been shown on cadastral maps of 16" = 1 mile. Each village forest will be unit of management.

Period of Plan:-

1.13 The period of working plan shall be from 2012-13 to 2022-23 for ten years.

1.14 The areas under various working circle are as below:

Sl.no.	Working Circle	Area (Ha)
1	Coppice with standerd W.C.	58,012.12
2	Rehabilitation cum Plantation W. C.	71375.82
3	Protection Management over lapping W. C.	1,30658.01
4	Khair overlapping W.C.	3385.03
5	Bamboo overlapping W.C.	8174.12
6	Wildlife overlapping W. C.	130658.01
7	JFM Overlapping W. C.	1,30658.01
8	N T F P Overlapping W. C.	1,30658.01

SILVICULTURAL SYSTEMS:-

1.14 For Khair overlapping and Bamboo overlapping working circles, the silvicultural system will be selection-cum-improvement. For coppice with standard working circle the silvicultural system will be coppice with standard. For management of plantation, the system will be simple coppice.

CHAPTER-II

WORKING PLAN FOR COPPICE WITH STANDARD WORKING CIRCLE

GENERAL CONSTITUTION AND CHARACTER OF VEGETATION:-

2.1 In view of continuity of the prescription and partial success of this system, an area of 58012.12 hectares have been bought under this working circle. These forests have good regeneration under the silvicultural system of coppice with standards without any aid. Undue risk in regard to regeneration and deterioration in productivity of the forest have been avoided and the result of the past working has been given due weightage. The forests of this Working circle are broadly composed of pure Sal with varying proportion of its common associates and of miscellaneous species. Predominant species in the mixed miscellaneous forest are Sidha (*Lagerstromia parviflora*), Dhauntha (*Angeissus latifolia*), Kekar (*Garuga pinnata*), Genjan (*Lanea coromandelica*), Siris (*Albizia lebbek*), Keonjhi (*Sterculia urens*), Piar (*Buchanania lanzan*), Kend (*Diospyros melanoxylon*), Asan (*Terminalia tomentosa*), with a few Salai (*Boswellia serrata*), Khair (*Acacia catechu*) and Bija (*P.marsupium*).

Broadly the above forests of almost pure Sal, occur on Southern part of the division. The forests on the western part and those adjoining the Project Tiger/Daltonganj North are of the miscellaneous species.

2.2 Range wise break-up of areas included in this working circle is given below.

Range	Area (Ha.)
Latehar	12457.75
Manika	12773.20
Chandwa	13013.05
Richughuta	9349.24
Balumath	10418.88
Total	58,012.12

SPECIAL OBJECTS OF MANAGEMENT

2.3 The special objects of management are:-

- (i) To improve the stocking and quality of the existing forests by regulating cutting on sound silvicultural basis, tending the young crop by suitable cultural treatment and by planting up the blanks with natural species.
- (ii) To ensure continued existence of forest in a healthy state for prevention of soil erosion, flood control and regulation of water supply.
- (iii) To meet the local demand for right holders and non-right holders of poles, timber to the maximum extent possible.

STOCK MAPS

2.4 The forests have been stock mapped on 4"=1mile map sheets showing the distribution of principal species, their size and density. Plantation already raised, area fit for plantation, erosion prone areas, regeneration status and rooted wastes have also been indicated by symbols.

METHOD OF TREATMENT

2.5 For the reasons outlined above, coppice with standard system has been adopted to retain vigorously healthy and well formed saplings of up to 8" in girth. This constitutes a prominent feature of this circle. The reasons for the retention of saplings of up to 8" in girth are to provide adequate soil cover by desirable

species after the main felling to safe-guard against erosion and invasion of grasses and to avoid as far as practicable the sacrifice of young saplings of valuable species.

STANDARD TREES

2.6 The standards are to be retained to serve the following objectives:-

- (i) To ensure re-stocking of blanks or under stocked areas.
- (ii) To increase the natural regeneration of the climax species.
- (iii) To secure production of large size timber of selected species in the next rotation depending on the site-conditions
- (iv) To prevent forest damage
- (v) To prevent erosion along streams and on steeper slopes.

Felling Cycles

2.7 The felling cycle has been fixed at 30 and 60 years. Forests which are expected to be managed for large sized timber were enlisted for 60 years felling cycle and rest were decided to managed at 30 years felling cycle. Demands of local dwellers were to be met from these forests.

DIVISION INTO COUPES

2.8 The net area of each forest has been arrived at after deducting the unproductive area from the forest which constitutes the management series. Only the net area of a forest has been divided into coupes to ensure the availability of forest produce throughout the period of felling cycle.

CONSTITUTION OF FELLING SERIES

2.9 In constituting the Forest Management series the points taken into consideration are the extent of rights and local requirements of the produce. Each forest will be divided into number of coupes depending upon felling cycle. The details are given in Appendix-XIV.

DEMARICATION OF COUPES

2.10 Coupes must be demarcated on the ground strictly in the same sequence as shown on the management maps. Maximum fifteen coupes have been shown on these maps. Old felling sequence and coupes have also been shown. Coupes will be demarcated on the ground by cutting clear lines 2m wide all around. Trees along the coupe boundary lines will be double ringed with coaltar at breast height and shall be retained. Such trees may be of 15 cm diameter and above standing 30 cm to 50 cm apart. Each coupe in right free management series shall be divided into sections by cutting internal lines to ensure efficient control over felling. The internal lines need not be very wide but must be clearly distinguishable with double half rings of coaltar. The coupe lines must be shown up properly. Sign-board indicating the number of coupe, area, year of felling etc. shall be put up at coupe corner and at the crossing of important roads and foot-paths. If there are big trees or rocks at desired points these may be utilized for writing there on the necessary information.

PRIORITY-ALLOTMENT OF COUPE AND REQUIRMENT OF FUNDS:-

2.11 Coupes will be laid out a year in advance of actual felling. Immediately after the demarcation of coupes items of work required for the improvement of future crop and its stocking will be listed. The list will include all or a few of the measures prescribed under sub-head "Subsidiary operations" depending

on the crop. Regular estimate operations wise for the execution of the measures as found necessary for the improvement of future crop will be made. The preparation of estimate at this stage will enable the Divisional Forest Officer to include the required the funds in his budget.

2.12 Priority list of the coupes required measures for improvement would also be prepared. In case the entire required fund is not available in a particular year, work of improvement would be confined in coupes ranking high in the priority list.

2.13 In spite of all these if the bare requirement of the funds is not available for the coupes listed as priority I, it is advisable to stop felling in such of the coupes as coppice regeneration is almost sure to fail and the process of creations of blanks will get accelerated. A list of such coupes may be sent to the Conservator Of Forest well in advance for his information and approvals.

STANDARD MARKING AND RULES THEREOF

2.14 Standards will have to be selected with utmost care as unless they are well grown, healthy, suitably placed and of valuable species from economic and silvicultural points of view, depending of course upon the availability of trees, the main objects enunciated in earlier paragraph will be defeated. One single uniform prescription in respect of number of trees to be retained as standard does not appear feasible in the forest of this division on account of the variation in stocking, possibility of damage by frost and risk of erosion in vulnerable areas.

2.15 For the well stocked coupes and part thereof free from damage by frost and erosion, the number of standards to be retained per hectare and the size to be preferred corresponding to different rotations are given in the tabular statement below.

Rotation	Number of standards to be retained per hectare		The size to be preferred in diameter
60		50	6"-10"(15cm -25cm) for class I trees.
40		70	8"-12"(20cm-30cm) for class II trees (15cm-20cm) class I trees (20cm-25cm) class II trees

MARKING RULES

2.16 (i) In the Management series or parts thereof which fall within the Khair overlapping working circle all Khair trees as the case may be, shall be retained but their retention will not be counted towards standards

(ii) Efforts should be made to select such poles for standard which have been originated from seedlings.

(iii) The distribution of the standards will be primarily guided by the following silvicultural and protective considerations.

(a) In the localities subject to frost the distribution should be as even as possible

(b) when blanks occur in the coupe the retentions of few well selected young Sal and other trees and poles to the windward of such blanks is prescribed.

(iv) Climbers resting on or climbing upon the trees marked for retention must be cut at the time of marking.

METHOD OF MARKING AND MAINTENANCE OF RECORDS:-

2.17 (i) Standards shall be marked by coaltar at breast height and at the base as close to the ground as possible.

(ii) They shall be serially numbered

(iii) Number of coupes shall be recorded below the serial number of the standards

(iv) The size of the standards and species shall be recorded against their number in the prescribed register of standards

METHODS OF EXECUTING THE FELLINGS

2.18 (i) All saplings below 10 cm dbh. in coupes shall not be felled except those which are malformed top-broken and diseased

(ii) Cutting in a section must be done from one end and must proceed to the other and on an even front.

(iii) All trees must be felled as clearly and as closed to the ground as possible. In no case stumps should be higher than 15 cm.

(iv) In additions to the standards marked for retentions, all edible fruit bearing trees such as Kend, Mahua, Piar, Mango, shall be retained provided that their number does not exceed more than 25 per hectare. No over mature malformed diseased and pollards of edible fruit bearing shall be retained.

(v) Trees of sacred groves Sarna or Jahira shall not be cut

(vi) In consideration of strong silvicultural reasons asthetic value and wild life preservations felling may not be done over such portions of the coupe wherever it is so desired.

(vii) No bamboo shall be cut

(viii) Healthy and well formed Khair trees below 20 cm in diameter shall not be felled

(ix) Over the portion of the coupe falling in Khair overlapping Working Circle, no Khair shall be cut.

2.19 There will be no restrictions on the felling of Khair trees over the remaining portions of the annual coupe subject to the limitation imposed under (viii) above.

2.20 The division of the annual coupes into two or more section is left at the discretion of the Divisional Forest Officer. Coupes will be demarcated and marked one year in advance of fellings.

2.21 Coupes not exploited in the year prescribed may be exploited in the year following but not in the subsequent years unless it is permitted by the territorial conservator with the approval of the Working Plan Officer.

SUBSIDIARY OPERATIONS

2.22 The attainment of the objectives laid down in previous paragraphs is largely, if not solely, dependent on the efficient and timely execution of the subsidiary operations. These are enumerated as below:-

In the year immediately after the main felling, these operations will be executed.

(i) Dressing down any stumps higher than 15 cm. from the ground

(ii) Coppicing down top-broken or otherwise damaged standards and the trees meant to be felled

(iii) close attentions has to be given to the seedling of Sal, Bija, Shisham, Salai, Khair and bamboo which occur in different stages and to the sizeable blanks or otherwise unproductive areas for which the following measures are prescribed.

(a) Seedlings of Sal, Bija, Shisham, Salai, Khair and bamboo occurring in patches and the coppice shoots of valuable species shall be freed from weeds, overtopping climbers and felled materials.

(b) Woody malformed seedlings of Sal, Salai, Khair either in group or singly shall be cut back.

(c) Young unestablished clumps of bamboo shall be cleaned and soil round about the clumps shall be hoed.

(d) Soil in blanks or unproductive patches shall be just hoed or loosened 20 to 30 cm. in width along the contours at 4m interval.

(e) With the first pre-monsoon showers seeds of Sal, Bija, Shisham, Salai, Khair and bamboo shall be sown in the worked over the soil and lightly covered. The choice of species will be guided by the extent and occurrence of seedling regenerations of the species present in the coupe area.

(f) Such patches shall be inspected during the rains to assess the extent of germination and operations if any, required for the survival and growth of the seedlings.

(g) Rigid fire protection at least for 5 years shall be ensured. The danger of fire may be considerably minimized if coupes lines are kept cleared by early burning.

The execution of operation as under items (a), (c), (d) and (e) above wherever required would be productive if funds permit to execute them in the following year as well.

CLEANING

2.23 In the 5th year the following operation are prescribed in all the felling series:-

- (1) Climber cutting
- (2) Miscellaneous cleaning
- (3) Reduction of coppice shoots to the minimum of two or three per stool
- (4) Bamboo clumps and seedlings of Khair and Salai shall be properly cleaned and tended.

THINNING

2.24 Thinning as is understood in the forest managed under uniform system, has very limited applicability on account of the openness of the forest and inferior site conditions in Latehar

Division. So far treatment prescribed are mainly to improve the stocking of the crop and therefore the area of application of thinning to get large size timber within the quickest possible time is very much limited. In view of heavy demand of small size timber and of species considered to be of poor value, the scope of application of thinning in true sense is very much reduced. But nonetheless the adverse influence of congestion and root competition in the young crop have to be removed to allow proper development. It would therefore be advisable to carry out regular mechanical thinning in the young crop. How quickly and to what extent the crop will respond to thinning in this locality is not yet known but it is presumed that an interval of 15 to 20 years should be made available to the thinned crop to attain its growth and development before it is finally coppiced. Thinning should, therefore be done in the 20th and 40th years in 60 years rotation and 15th and 30th year in 30 years rotations.

THINNING RULES

2.25 In view of what has been stated above the following rules are laid down for guidance in the field.

(a) FIRST THINNING

This thinning will be done in every management series when the young crop is 15/20 years old. The nature of this thinning will be purely mechanical with a view to provide an average spacing of 6 ft in the standing crop.

- (i) Cut back all worthless species interfering with the growth of valuable ones
- (ii) Cut back all dead, dying, diseased, crooked and malformed items.
- (iii) Cut back damaged or dead standards if any
- (iv) Cut back all climbers

(v) The number of coppice shoots per stools should be reduced to one

(vi) The crop should be thinned so as to have final spacing of 6 ft. on the average.

(b) SECOND THINNING

2.26 The second thinning will be done when the crop is 30/40 years old. It will be an ordinary thinning for which the following guidelines are laid down:-

(i) The operations prescribed under items (i) to (v) under first thinning will be repeated in this case also. In additions to the above,

(ii) Cut back wolf trees, if any present,

(iii) Cut back suppressed stems provided their removal do not expose the soil

(iv) The crop should be thinned so as to have an average spacing of 8ft.x 8ft.

SCHEDULE OF THINNING

2.27 In consideration of the present status of the crop and the impact of biotic and edaphic factor thereon, the thinning schedule must not be followed mechanically. In many cases, the expenditure of thinning may prove wastage and harmful effect may be caused on this account. The decision to execute this operation will be therefore, necessitate close and through examination of the crop by staff not lower in the rank than a Range Officer a year in advance of the time schedule.

Thinning may not, therefore be required in all the coupes falling due for it annually and it may not also be required over the entire coupe area of any particular one. It should ordinarily be confined to such coupes or part therefore where real signs of competitions affecting the growth of valuable trees become apparent. On dry eroded and open areas as also in

miscellaneous patches great caution will be necessary or else the ground may get unduly exposed and remain so far long as a result of thinning.

GRAZING

2.28 Coppice coupes will be closed to grazing for a period of six years from and including the years of fellings. This restriction may however be relaxed earlier in the case of any coupe where the Divisional Forest Officer finds on his inspection that grazing if allowed will not adversely affect the growth of the new crops. On the other hand, if he finds that grazing over such coupes cause damage to the soil and the crop, he may prohibit grazing over such area for a specified period subject to the limit of one third of the total area of the felling series at a time.

FIRE

2.29 One single factor which has greatly contributed in upsetting the hopes and faith laid in the prescription of the previous plan and the result therefore is fire. The entire Working Circle has to be ensured of the protection against fire.

UNAUTHORISED CUTTING

2.30 People are in the habit of cutting young crop mainly for fencing and firewood. The requirement of fencing can be met to some extent from the produce obtained from cleaning operation if it is executed before June. Produce obtained from cleaning and thinning operations may be given free to right holders.

CHAPTER-III
WORKING PLAN FOR THE KHAIR
OVERLAPPING WORKING CIRCLE

GENERAL CONSTITUTION

3.1 This Working Circle comprises all such forest which contains Khair (*Acacia catechu*) trees in commercially exploitable quantities. On account of its occurrences along with other species this working circle overlaps other working circles. It covers an area of 3385.03ha.

CHARACTER OF VEGETATION

3.2 Khair is a pioneer species and is first to colonise any blanks. But it is not that it comes up only in blanks. Although Khair does favour particular type of rock and soil, its occurrence in Latehar Division in dry deciduous forest and in dry Sal forest is a sure indication of its character to grow on a variety of soil. The general condition of Khair trees is however very discouraging. The trees are generally stunted, crooked and malformed with a few exceptions in comparatively inaccessible areas. Lopping has played the most important role in the formation of malformed trees. Khair, by virtue of its economic importance had to suffer the most by illicit Katha traders. Even stumps are dug to extract Katha. Lopping, illicit felling aided by fire and grazing has restricted the improvement of Khair crop considerably. Complete absence of cultural operations too contributed towards the present condition.

3.3 Prolific regeneration of Khair even on highly hostile sites and its survival in these adverse conditions, the great potentiality that lies in this species. If given adequate protection and required care, it may become one of the principal species of the division. The survival of Khair on highly eroded and gullied sites after proper protection amply supports the above view. Almost all the plantation in the division have fairly high incidence of Khair seedlings. The economic value of this species

and the case with which it is coming up, call for adequate attention.

SPECIAL OBJECTS OF MANAGEMENT

3.4 The special object of management are:-

(a) To obtain maximum sustained yield of Khair trees of economic size, consistent with the silvicultural claims of other important species with whom Khair occur mixed in the crop

(b) to aid and help the young seedling and crop in areas allotted in the working circle by suitable cultural operations and there by the augment the stocking and improve the quality of the future crop

STOCK MAPS

3.5 Khair has been stock mapped on map of 4"=1mile. Such forest and parts there of which contain Khair in commercially exploitable number have been stocked mapped and the incidence has been shown with distinct separate symbol.

METHOD OF TREATMENT AND EXPLOITABLE DIAMETER

3.6 The system will be selection cum improvement system. Selective felling of Khair trees of and above exploitable diameter of 20 cm. will be done.

FELLING SERIES

3.7 Felling series have been constituted for the convenience of working. Each annual coupe of the felling series is expected to yield sufficient Khair trees to permit economic exploitation. In doing, so adjustments have been made in the Khair bearing forest of different ranges. The felling series as far as practicable have been confined to territorial boundaries of the range.

EXPLOITABLE DIAMETER

3.8 The minimum exploitable diameter has been fixed at 20cm. All the trees in a coupe of above 20cm. dbh will be felled.

FELLING CYCLE

3.9 The felling cycle will be of 15 years

ANNUAL COUPE

3.10 All the felling series have been divided into 15 annual coupes. The details are given in appendix-XV. coupes have been so made as to yield Khair trees on sustained basis as far as possible. Almost whole village has been given in one coupe to avoid cutting of artificial lines.

REGULATION OF YIELD

3.11 The yield will be regulated by area only. It is accordingly prescribed that the annual coupe will be exploited on the basis of area as indicated in the statement in appendix.

RULES OF MARKING

3.12 All Khair trees including dead and dry trees of and above 20cm dbh present in each annual coupe shall be marked for removal. In addition to them the following will also be marked to improve the crop.

- (a) Gravely malformed, gnarled or twisted stems on which increment will not be economic will also be marked even below 20cm dbh.
- (b) In stump having more than one shoots, the best one should be retained and the remainder should either be marked or cut back at the time of marking.

EXECUTION OF MARKING

- 3.13 (a) All trees should be felled as closed to ground and as clean as possible. Felling, in any case should be above 15 cm from ground level.
- (b) To get vigorous growth of Khair coppice, felling should be completed before 31st March
 - (c) Only one year old coupe may be felled without deviating the prescription.

SUBSIDIARY CULTURAL OPERATIONS

3.14 In the year following the main felling the following operation will be done:-

- (a) All marked trees or stumps not felled by the JSFDC will be cut back at the cost of the JSFDC and the produce will be handed over to the later.
- (b) Any Khair tree damaged in the course of felling shall also be cut back.
- (c) Young sapling would be given closed attention and if top broken, malformed or defective would completely be cut. These sapling should be freed from climbers and overtop of inferior species.
- (d) Coppice shoots should be reduced to two preferring those which are healthy and growing from ground level.

CLEANNING

3.15 This operation will be executed in the 5th year after the main felling and will consist:-

- (a) Reduction of coppice shoots to one per stool.
- (b) Freeing of coppice shoots and young sapling of seedlings origin from overtop of inferior species shrubs etc.
- (c) Cutting away all climbers including those interfering with established seedlings and saplings.
- (d) Congestion wherever present should be removed by thinning.

The above time schedule of cleaning may be changed by a year or two on either side if the felled areas are to be gone over either under Coppice with Standard Working Circle or Rehabilitation-cum-Afforestation Working Circle.

MISCELLANEOUS REGULATIONS

3.16 (a) Khair trees will not be allowed to be felled in the course of exercise of right by right- holders.

- (b) Lopping of Khair trees shall be strictly forbidden.
- (c) Felling of Khair trees under any other Working Circle is prohibited.
- (d) The illicit trade of Katha should be totally stopped.
- (e) No Khair trees will be felled after 31st March

CHAPTER-IV

WORKING PLAN FOR THE BAMBOO OVERLAPPING WORKING CIRCLE

GENERAL CONSTITUTION OF THE WORKING CIRCLE:-

4.1 This working circle covers all bamboo bearing forests. An area of 8174.92 ha. of forest is included in this working circle.

CHARACTER OF VEGETATION

4.2 The occurrence of Bamboo, its condition and result of past working have already been discussed. It primarily occurs on the northern zone of the division though its presence elsewhere is not negligible except in Kuru, Chandwa, Balumath and Latehar beats. Its occurrence is not uniform throughout and appears to prefer miscellaneous forest, shallow valley and lower slopes of the hill and cooler aspects. The result is that there is a wide variations in density in the forest listed as bamboo-bearing. The quality of bamboo in this division is also greatly influenced by the locality factor and the site conditions particularly soil depth, aspects and drainage. Bamboo of Oreyā Kumandih and Kuru is far superior to that of Boda, Nagar and Endua etc.

4.3 While on the one hand bamboo is easily extending and occupying new area on the other hand, it is heading toward complete elimination from some of its abodes. Many such forests which formed the part of Bamboo cutting series have now been taken out on account of almost complete destruction of bamboo due to over exploitation. This situation has been created by the local middle man in the name of Turees. The bamboo bearing forests close to the habitation have suffered the most. In fact a very engrossing problem has appeared in so much as nature helps and the site favour this valuable species in one part of the division but in other parts it is being eliminated at the hand of men. By taking advantage of the present trend of natural reproduction of bamboo and considering to meet the local demand on priority and channelising the trade of bamboo-basket, it may be hoped, can serve the bamboo forests. Earlier most bamboo C.S. were worked on 12, 8 and 4 years long leases.

Some were auctioned annually. During the contract period right holders were neglected and there was always under reporting and over-exploitation by the contractors. The deficit clumps used to be marked and handed over to the purchasers and was expected that they would be cleaned during cutting. The working of the bamboo forest by the state trading division is also not proper. All the exploitable series are not cut annually. The irregular and intermittent cutting due to lack of demand, transport facility and law and order problem has virtually eliminated the scientific management. The unemployed labors force and the ready middle man to exploit the situation have given momentum to the Karil felling by Turees and other in name of Turees to ever-rising the bamboo basket trade. Large quantity of Kopal (young shoots of Bamboo) is illegally extracted from forest in months of July and August and sold to local and distant markets. This Kopal is used for Pakaura and Pickling.

SPECIAL OBJECTS OF MANAGEMENT:-

4.4 The special object of management are:-

- (a) To improve the stocking of bamboo by artificial aid,
- (b) To meet the requirement of Turees and right holder with such convenience to them as may be practicable without damaging the bamboo forests;
- (c) Consistent with the above to obtain the maximum sustained yield of industrially acceptable and silviculturally available bamboos.

STOCK MAPS

4.5 Bamboo has been shown by an independent symbol in the stocks maps prepared on a 4"=1mile scale which has enabled to assess the areas of bamboos bearing forest.

AREA DISTRIBUTION AND CUTTING CYCLE

4.6 A list of bamboo-bearing areas together with where exploitation bamboo occurs has been given in appendix-XVI

CUTTING CYCLE:-

4.7 The cutting cycle will be of 4 years to maintain the continuity, the cutting series of the plan under revision which workable have been kept intact as far as possible. The degraded series has been constituted to rehabilitate the bamboo and meet the local demand and that of the Turees.

The composition of the series is given in appendix-XVI

The area of annual coupe has been brought to round figure by rounding off the decimals. Right free and right-burdened bamboo bearing forests have also been constituted into separated cutting series.

Usually the whole village has been allotted to one annual coupe in which case no demarcation on the ground is necessary. Coupes lines have been shown to the management maps wherever it has been found necessary to indicate the area of annual coupe. The artificial lines wherever to be cut, are to done by clearing 3m wide strips and putting the standards coaltar marks on the trees along the coupe lines at convenient distance. In all cases sign-board indicating the cutting series and the name and number of the coupe should be put at conspicuous places.

METHOD OF EXECUTING THE CUTTING

4.8 The following cutting rules are prescribed:-

(i) In each clumps the clump of the previous rainy season commonly known as Karils shall not be cut. Even the damaged Karils should be left intact only the damaged end may be removed.

(ii) In each clump old, healthy, green and straight culms equal to the number of Karils or to a minimum six in any case shall be left uncut. These older clumps should be left on the periphery and

should be so distributed as to provide the necessary support to each Karils.

(iii) No clumps containing less than eight green culms shall be worked but such culms must be properly cleaned. This will mean removal of dead and damaged old culms or high stumps. In no case Karils shall be cut; the damaged end may, however be removed.

(iv) Digging and extraction of bamboo rhizomes are strictly prohibited.

(v) Cutting should be done within the foot from the ground level or just above the second visible node whichever is less.

(vi) Cutting must be done with a sharp axe or saw in such a way that the stumps is not split or torn.

(vii) In clump which is in flower, no cutting shall be done until the seeds have ripened. After this all the culms shall be cut.

(viii) Except the culms which have to be retained under the above rules, all culms including the dead damaged and high stump in the clumps shall be cut. The dead damaged or malformed culms should be cut first. Cutting of green bamboos should be done from inside cut so that the culms which are to retained should be well distributed on the periphery of each clump.

(ix) All climbers and miscellaneous growth in a clump interfering with their proper development should be cut and removed.

(x) Cutting of bamboo between the 1st July and the 14th October in each year is prohibited.

(xi) Illegal extraction of Kopal should be stopped firmly.

(xii) JSFDC will not work the same coupe in more than one year. The Coupe will be returned annually to the territorial division. Cutting in the annual coupe should start from one end and proceed on an even front. For proper working the qual-

community coupe should be divided in 5 sections. Cleaning in clumps should be carried out simultaneously with the main cutting. All slash should be removed beyond a distance of one meter from each clump to eliminate fire hazard. Clumps containing less than 8 green clumps must be cleaned under proper supervision. All such clumps should be enumerated while making coupes.

DISPOSAL OF COUPES

4.9 The quasi-community coupe should be laid out and one fifth of the area should be handed over to the right holders in advance in October. The left over area will be handed over to JSFDC in May-June to be exploited from October only after the written consent of the Working Plan Officer.

The entire coupe of the community area should be thrown open to the local right-holder so that they can meet their demand and clean their clump. The unworked part or whole of the community coupe will only be handed over to the State Trading after taking written consent of the Working Plans Officers.

SUBSIDIARY CULTURAL OPERATIONS

4.10 Working in bamboo in accordance with the cutting rules prescribed in forgoing paragraph and if supervised properly, may not necessitate intensive subsidiary cultural operations. However in the year following the cutting, the bamboo coupes will be gone over and all dead and dry culms, high stumps and hanging branches, if any shall be removed by the territorial division at the cost of the State Trading and the produce will be handed over to them. Climbers, if any damaging the clumps shall be cut, with a view to increase the hitherto low outturn per hectare and in consideration of the tendency of the bamboo to regenerate naturally and availability of sites suited to bamboo in

Latehar Forest division, the following operations are recommended:-

(a) Immediately after the main cutting and with the first break of shower the soil around and deficit clumps should be hoed up to a radius of one meter.

(b) In suitable sites within coupe area, seeds of bamboo may be sown after disturbing the surface soil either in patches or in lines depending on the configuration. This operation too should be done immediately after the main felling when the rains start.

(c) Patches where sowing has been done should be attended in the next and subsequent years.

SUPPLY TO TUREES

4.11 The Turees cut nothing but the new clumps. These new culms are just those that keep the bamboo clumps from extinction. They use only freshly cut bamboos and so they visit the forest throughout the year. So far the effort to make them use freshly cut old bamboo and to store such bamboos for their use during rainy season have borne no fruit. This has resulted in many bamboo forests having completely wiped out. This in fact, is a serious menace and needs to be tackled with all seriousness and sincerity.

The Turees obtain their requirement on the days agreed upon from the nearest current bamboo coupe on payment of Rs.3/- per hundred bamboos. As the supervision of forest staff is not proper they go on cutting Karils. The supervision needs to be effective so that no more than one clump will be cut by the Turees.

The clumps from which the Turees are to get their needs will be marked co-operative society of the Turees should be registered through the help of the Tribal welfare cooperation to make bamboo available right in the village of the Turees who

after manufacturing basket etc. may sell them to the society.
This will discourage them to go to forest and cut Karis.

CHAPTER-V

WORKING PLAN FOR THE REHABILITATION CUM PLANTATION WORKING CIRCLE

GENERAL CONSTITUTION

5.1 Such forest lands which are rooted wastes, blanks or semi-blanks and having plantations have been included in this working circle. Areas of above descriptions are extensive and cover a large number of villages. The deplorable condition of forests is as a result of over-grazing, fire, indiscriminate felling, hacking in forests close to habitation and failure of earlier efforts to rehabilitate them. Much of the area is covered by lantana bush with scattered pollards and large trees of Salai and Khair. Soil is generally poor and infertile with severe sheet erosion and advancing gullies. These areas are also prone to encroachments. Total forest area included in this working circle will be 71735.82 ha.

SPECIAL OBJECTS OF MANAGEMENT

5.2 The special object of management of these areas is:

- (a) to rehabilitate degraded forests as fast as possible with community participation
- (b) to bring under vegetation such areas which are still blank and partially stocked.
- (c) to rehabilitate rooted wastes of valuable species.
- (d) to minimize the loss of soil and run-off
- (e) to meet the ever increasing demand of forest produce of local people
- (f) to provide increased quantity of grass for fodder
- (g) to provide employment to local unemployed poor people and,
- (h) to harvest existing plantations on sustained basis.
- (i) Consistent with the soil and climatic conditions to raise plantation of fuel wood, fruit and small wood species to meet local requirement and surplus, if any to be used in wood based industries.

METHOD OF TREATMENT

5.3 This working circle[^] covers three categories of forest lands. Different category of land will be given different treatment.

1. Rooted wastes and degraded forests (open forest with crown density between .1 and .4) will be treated by fencing and planting the blanks with local species depending upon the site conditions. The forest area of this category will be 27876.93 ha. Each range will be treated as rehabilitation block and will be treated in next 20 years

The detail of method of treatment is given below.

- a. Fencing:-The area to be rehabilitated will be effectively fenced by stone wall fencing or trenching. VFMPCS will also be involved in protection of area.
- b. Cut back:-Malformed high stumps and bush growth will be cut back to create conditions for vigorous coppice shoots. Well grown saplings will be retained.
- ✓ c. Planting:-Blanks and scrub areas will be planted with suitable indigenous species. The detail of plantation technique will be same as described in Vanropan Pustika published by C.C.C.F.(Development) Ranchi.
- d. Soil and moisture conservation measures:-In the areas, badly affected by erosion dry rubble check dams will be constructed. Contour trenches will be dug all over areas at suitable intervals. Ploughing up the land in plain areas (wherever possible) will be taken up to assist the natural regeneration of Sal.
- e. Miscellaneous Regulation:-Rehabilitated areas shall be protected from grazing at for five years with the cooperation of VFMPCS. Fire control will be maintained in rehabilitated areas as young saplings are highly vulnerable to fire. Besides the

effective protection against grazing and fire it is very essential to protect them against illicit felling which is the main cause for degradation of these forests. There are areas where local villages have successfully protected the forest. Such right holding villages whose forests have been included in this working circle would exercise their rights from the area due for cutting back in that year; if there is any surplus left in the cut back area it can be sold and the revenue will be distributed as per the Govt. circular issued for JFM. Rehabilitation block will be constituted for the purpose. Each range will be treated as rehabilitation block. In coming ten years entire forest area of this category will be treated. The details are given in Appendix-XVII.

5.4 Tending operations as are needed for ensuring the healthy growth of young saplings of Sal will be carried out. Tending operation such as clearing will be taken up in the year itself. In subsequent year cleanings if necessary are to be carried out. Gradual thinning will have to be carried out only after young crop is established. However, this operation has to be carried out judiciously. Bare rock hillocks having little or no soil need sowing of seeds of hardy trees such as Ber, Prosopis, Babul, Neem, Tamarindus and Ficus species.

2 Scrub forest (crown density < 0.1) will be restocked by artificial regeneration. Choice of species will depend on site conditions. Indigenous and local species has to be given preference. An area of 27740.85 ha. will be treated by this method.

Methods of Treatment:-

5.5 The silvicultural systems will be artificial regeneration by planting with suitable species depending upon edaphic and biotic factors of areas. The details of area is given in Appendix-XVIII. The plantation will be done according to plantation techniques described as below.

For successful plantation the following techniques should be adopted.

1. The size of pits should be 45 cm. x 45 cm. x 45 cm. or 30 cm. x 30 cm. x 30 cm. depending upon the species to be planted. For fruit bearing species it should be larger.
2. Seedling of appropriate heights should be planted. It should not be less than 2' in height. This much height is attained in 4 to 5 months time. In case of Asan and Arjun one year old plants are desirable. Similarly for stumps of Shisham and teak one year old seedlings are preferable. Before plantation the seedling should go through the process of hardening so that survival rates remain very high.
3. Seedling should be raised in polythin bags of size 100 x 30 cm. x 45 cm. The bags should be gusseted and perforated.
4. Seedlings are to be planted at the time when soil has sufficient moisture and there is no risk of seedling being dried up. Plantations should be done in time so those seedlings get sufficient time to grow.
5. Casualty replacement has to be done in the same year of planting as soon as possible. It is not advisable to wait for second year for replacement of casualty.
6. Spacing of plants should be 3 m x 3 m or 2 m x 2 m. In the case of fruit bearing species it should not be less than 5m x 5m.
7. Weeding and hoeing will be done around the plants in the diameter of 1m. It will be done twice in the year of planting. First weeding and hoeing will be carried out 15 days after the planting. Second weeding and hoeing will be completed after rains are over in the last week of September or first week of October.
8. As regards nursery the following points should be kept in mind.

- i- Seeds should be sown in drills. Broad cast sowing should always be avoided. There should not be too much shade for the seedlings.
- ii- Seed sowing should be done in month of October-November or Feb. So that with the onset of rains seedlings of height up to 2' may be available.
- iii- Excess of watering and application of fertilizer should be avoided.
- iv- In polythene bags the mixture of soil, sand and dung in the proportion of 2:1:1 should be filled. 5 % Aldrin powder must be added.
- v- The number of seedling to be raised will be 20 % more than the number of pits dug up to provide for casualty replacement.
- vi- After the sowing has been done, the bags should be covered with paddy straw and watered twice in a day. With germination coming up the straw will be removed.

9. Choice of species will be done on the basis of soil profile of site according to following manner:

Soil Depth	Texture	Structure	Main species
4' and above	Clayey	Dense and compact	Khair, Babul, Asan
	Loamy	Open and permeable	Casia siamea, Albizia lebbek.
	Sandy	Permeable	Shisham, Khair;
3' to 4'	Clayey		Khair, Babul, Albizia procera, Asan
	Loamy		Sisoo, teak, Albizia lebbek
	Sandy		Shisham, Khair, Karanj, Neem, Asan
2' to 3'	Clayey		Khair, Babul, Karanj
	Loamy		Shisham, Casia siamea, Albizia lebbek.
	Sandy		Khair, Neem
1½' to 2'	Clayey		Khair, Bel, Amla, Imli, Manua.
	Loamy		Casia siamea, Shisham, Khair
	Sandy		Khair, Ber, Neem
Less than 1½'			Babul, Ber, Ficus, Neem

Areas which are prone to water logging should be planted with like Arjun, Asan, Jamun, Karanj, Gumhar, Kadam etc.

10. Plantation areas will be given protection by means of trench. The size of trench will be 1.75m x 1.25m x 1.25m. In the areas where stones are available in abundance the stone wall fencing may be resorted to. The soil profile of Latehar division is given below. This would help in choosing the species for plantations in different soil qualities. The detail chemical analysis has been done in the soil laboratory of the Forest Department.

3. For plantations already raised, silvicultural system will be coppice selection. If coppice regeneration will not be able to cover up entire area, blank areas will be restocked by nursery raised seedlings. Immature poles and saplings will be retained to form as a part of future crop. Total area of 14774.36 ha. will be included in this category. The details are given in Appendix-XIX

Felling Cycle

5.6 The felling cycle will be 15 years. There is no need to fix period of rotation for plantation.

Exploitable Diameter:-

5.7 There are very few pure plantations in this division. Number of species like khair, Siris, Shisham, Eucalyptus, Bamboo etc. For harvesting these plantations, minimum exploitable diameter at breast height is fixed as below;-

Eucalyptus and Acacia auriculiformis	-	4" d.b.h.
Naturally grown species	-	6" d.b.h.
Sissoo, Teak, Gamhar and Khair	-	8" d.b.h.
Any other species	-	6" d.b.h.

ANNUAL COUPES:-

5.8 Each felling Series has been divided into 15 annual coupes. The area of each coupe could not be made equal because the

plantations have not been raised uniformly and in continuity each. Statement of annual coupes has been furnished in Appendix . The territorial Divisional Forest Officer shall hand over the plantation coupes to JSFDC latest by the end of October of each year for their working.

SEQUENCE OF FELLING:-

5.9 The sequence of felling has been so arranged that the older plantations will be worked first and the younger plantations subsequently after them. The coupe number in the statement of annual coupes will determine the sequence of felling.

YIELD:-

5.10 The yield of the plantation coupes of this division will be regulated by area because the success of plantations is very much variable from one plantation to the other and even in the same plantation from place to place.

METHOD OF EXECUTING FELLING AND RIGHT HOLDERS SHARE.

5.11(a) Felling operation will be regulated by area Coupes will be divided into four sections one better section will be opened to right holders. If that will not be enough to meet their requirements, the other section may be given by the Range Officer after due permission from the Divisional Forest Officer.

(b)The felling will start from one section and it will proceed in a systematic manner to the last section of the coupe: Lanky, hollow, crooked and malformed, spellings or poles below the exploitable diameter will also be coppiced.

(c) Coppice shoots needs be attended properly to get new shoots which shall form the future crop of the area. Fencing of the coupe after working will be done to plant in blanks the next year.

(d) In case of pure plantation of Acacia 1" deep trenches in between lines of plants would be dug two years in advance so

that natural regeneration of Acacia is also available before cutting the available trees in the plantation coupe.

(e) Felling should be completed in the coupe by the end of march in any way so that the coppice may be vigorous.

(f) It will be the responsibility of the territorial Divisional Forest Officer to protect the area immediately after felling. For this purpose he has to plan and make funds available one year in advance.

(g) Lops and tops i.e. materials below 2" in diameter would be provided to the village free of cost. This will help them to have some affection for the plantation created in their area. These lop and tops will not be given to the coupe purchaser if any.

(h) Bamboo is not worth exploitation in near future. When they are worth exploitation they will be cut as per standard rules.

POST FELLING OPERATION

5.12(a) Climber cutting will be done in the coupe, climbers hampering growth of trees shall be cut.

(b) All debris and inflammable materials will be removed from the coupe as a precaution against fire hazard.

(c) The coupe are will be completely fenced to provide affective check against grazing.

(d) Blank areas of the coupe will be taken up for reforestation in the year subsequent to the felling.

(e) Gully plugging work should be taken up along with the reforestation of the blank areas. The failed species should not be tried again unless the Divisional Forest Officer is confident of its success in the particular soil.

(f) Coppice shoots needs be spaced on the next year of felling. Shoots less than $\frac{1}{2}$ meter in height need not be spaced at all. In taller shoots the spacing should be $\frac{1}{2}$ the height in meters between the coppice shoots.

(g)After felling the area will be automatically transferred to Rehabilitation Working Circle and will be restocked by sowing and planting in subsequent year.

DISPOSAL OF THE PRODUCE;-

5.13 The Divisional Forest Officer will dispose of the forest produce as per their rules and procedure. The distribution to the individuals should be left to the VFMPCC concerned. The President of the concerned VFMPCC should be informed first to earmark the portion of the coupe for right holders. Difficulties may arise during execution of the prescription and so the Territorial Divisional Forest Officer authorised to deal with it even with some modification and relaxation of this prescription.

CASES OF DISMAL PLANTATION;-

5.14 Though the entire plantation has not been visited and their detailed inspection notes have not been prepared but whatever has been inspected gives a dismal figure. The failures are many. Even in successful plantation, damage by theft is very high. Protection from grazing is almost absent as not type of fencing is deterrent to cattle. Usually the plantations have been forgotten after three years. Few pit registers and plantation-journals are available to know the technical details and actual rate of failure and their reasons. Improper selection of species for the site is also one of the main reasons of failure.

5.15 It is suggested that all failed plantations must be examined by a permanent committee chaired by a senior officer, which will analyze the causes of failure and suggest for improvement instances of gross mismanagement shall be brought to the notice of the PCCF for taking appropriate remedial action. Plantation journals of plantations shall be updated regularly and maintained till the harvesting of plantations.

REMEDIES:-