GOVERNMENT OF MAHARASHTRA
FOREST DEPARTMENT

WORKING PLAN FOR

EAST NASHIK FOREST DIVISION

PLAN PERIOD-2012-2013 to 2021-2022

VOLUME - I

By

Jeet Singh, IFS
Chief Conservator of Forests,
Working Plan, Nashik

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Chief Conservator of Forests
Working Plan, Nashik

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प्रधान मुख्य वनसंरक्षक (वनबल प्रमुख), म.रा.नागपूर यांचे कार्यालय.
पोलिस जिमखाना जवळ, सिव्हिल लाईस, नागपूर

क्र.कक्ष-१४/ (१३-१४)/9038 /१३-१४
नागपूर ४४०००१, दिनांक: 9/10/2013

अत्यंत महत्तवाचे/तातडीचे

विषय: पूर्व नाशिक वन विभाग श्री.जीत सिंग, भावसे श्री. चंद्रकांत खाडे भावसे, लिखित सन २०१३-१४ ते २०२२-२३ या कालावधीच्या प्रारुप कार्य आयोजनेस मंजूरी बाबत.

संदर्भ: मुख्य वनसंरक्षक (मध्य) भारत सरकार पर्यावरण व वन मंत्रालय, भोपाल यांचे पत्र क्रमांक File No.१२-०३/२०००(FOR)/२११९, दिनांक:२३/१२/२०१३

उपरोक्त विषयांकित प्रकरणी केंद्र शासनाने त्याचें संदर्भिय पत्रान्वये श्री.जीत सिंग, भावसे श्री. चंद्रकांत खाडे भावसे लिखित पूर्व नाशिक वनविभागाचे कार्य आयोजनेस सन २०१२-१३ ते २०२१-२२ पर्यंत मंजूरी प्रदान केलेली आहे.

तथापी सदर पूर्व नाशिक वनविभागाची कार्य आयोजना सन २०१३-१४ ते२०२२-२३ या कालावधी करीता मंजुरीस्तव केंद्रशासनास सादर करण्यांत आलेली होती.

वरील संदर्भिय पत्रात नमुद असल्याप्रमाणे पूर्व नाशिक वनविभागाच्या कार्य आयोजनेत दुरुस्ती करुन घ्यावी.

संदर्भिय पत्राची छायांकित प्रत सहपत्रीत करण्यांत येत आहे. संदर्भिय पत्रात नमुद केलेल्या अटिंच्या अधिन राहून दिलेल्या निर्देशाप्रमाणे आवश्यक ती कार्यवाही करावी व सदर मंजूर कार्य आयोजना तातडीने अमंलात आणण्याची कार्यवाही करावी.

सहपत्र: वरीलप्रमाणे

for प्रधान मुख्य वनसंरक्षक
(उत्पादन व व्यवस्थापन)
महाराष्ट्र राज्य, नागपूर

प्रधान मुख्य वनसरक्षक(उत्पादन व व्यवस्थापन)
म.रा.नागपूर यांचेकडून अनुमोदीत

प्रति,
मुख्य वनसंरक्षक
कार्य आयोजना विभाग,
नाशिक.

प्रतिलीपी: अपर प्रधान मुख्य वनसंरक्षक (कार्य आयोजना-पश्चिम),पुणे यांना सहपत्रासह माहिती व आवश्यक कार्यवाहीस समादराने अग्रेषित.
प्रतिलीपी: मुख्य वनसंरक्षक (प्रादेशिक) वनवृत्त, नाशिक. विभाग यांना सहपत्रासह माहिती व आवश्यक कार्यवाहीस अग्रेषित.

R.FO.W.P.NSK
20 JAN 2014
ACF/WP
Pl. discuss
4

Conservator of Forests
Working -
Date 22/1/2014

D:/Misc/Jan.2014

Speed Post

भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण एवं वन मंत्रालय
MINISTRY OF ENVIRONMENT & FORESTS

सत्यमेव जयते

क्षेत्रीय कार्यालय, पश्चिम क्षेत्र,
Regional Office, Western Region,
"केन्द्रीय पर्यावरण भवन"
"Kendriya Paryavaran Bhavan"
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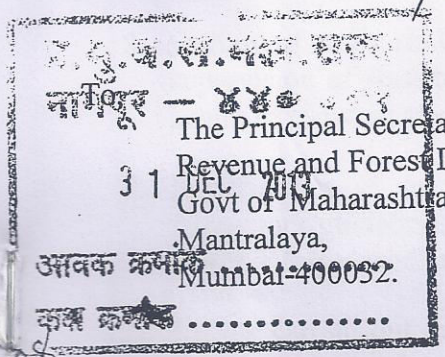
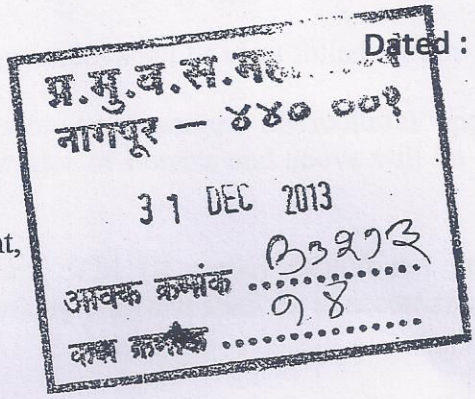
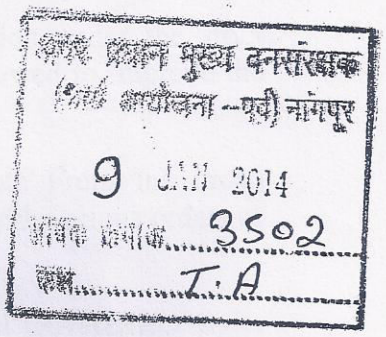
File No. 12-3/2000(FOR)/2119

Dated : 23/12/13







The Principal Secretary,
Revenue and Forest Department,
Govt of Maharashtra,
Mantralaya,
Mumbai-400032.

Sub. : Working Plan proposal for East Nashik Forest Division, written by Shri Jeet Singh, (IFS) and Shri Chandrakant Khade (IFS), for the period of 2013-14 to 2022-23.

Ref. : Deputy Secretary, Revenue and Forest Department's letter No. FDM-2013/CR No. 278/F-2 dated 10-10-2013.

Sir,

With reference to the above mentioned subject, I am directed to convey the approval of the Central Government to the said working plan in accordance with the powers vested under Forest (Conservation) Act, 1980 and subject to the following conditions :

1. The currency of the Working Plan shall be for a period of 10 years i.e. from 2012-13 to 2021-22.

2. The orders of Hon'ble Supreme Court in the matter of Godaverman Therumalkpad Vs Union of India in W.P. (Civil) No. 202/95 and related Interlocutory applications shall be strictly adhered to. Any prescription or operation at variance with the Hon'ble Supreme Court's order shall be kept in abeyance till the order is in force or otherwise modified.

3. Further, in compliance with orders of Hon'ble Supreme Court's dated 22.09.2000, the state government of Maharashtra shall ensure that regeneration of forests is commensurate with felling carried out under this working plan.

28/12/13

4. No felling shall be carried out without allocating necessary fund for implementation of regeneration operation so as to make regeneration commensurate with felling. In the event of failure in regeneration or any shortfall in carrying out regeneration operation, no further felling shall be undertaken until the failure/shortfall is made up.

5. Following the directions of the Hon'ble Apex Court in their order dated 22.092000, a Core group has been constituted under the Chairmanship of the Director General of Forests and Special Secretary for deciding the extent of harvesting that could be permitted under approved Working Plans for ensuring regeneration to be commensurate with felling.

6. Instruction/directions of the Central Government in this matter to be issued in future shall be strictly complied with. Felling has to be done by State Government only after seeking permission from Core Group constituted by the MoEF, New Delhi.

7. No forests bearing naturally grown trees shall be clear felled for any purpose whatsoever.

8. Felling of trees shall not be allowed. Standard Silvicultural operation under the strict supervision of Assistant Conservator of Forests and above will be allowed to improve the health of growing stock.

9. Prescriptions of micro plans for JFM (if made) should not deviate from the broad framework/guidelines of the working plan and shall be in accordance with various orders of Hon'ble Supreme Court.

10. Felling carried out on forest land after seeking approval of the Central Government under Forest (Conservation) Act, 1980 will not be treated as deviation. However, proposed felling in the forest division shall be restricted proportionately in the current/future years to compensate this removal.

11. No deviations shall be made from the prescriptions of working plan read with the conditions stipulated herein without prior approval of the Central Government under Forest (Conservation) Act, 1980, However, deviations of positive nature i.e. out of turn plantation carried out outside the worked area under any project, schemes and compensatory afforestation may be approved by the competent authority of the State Government.

12. Growth statistics of regeneration, record of its survival will be appended in Working Plan from time to time.

13. Midterm review of Working Plan shall be undertaken after five years so as to make any changes, if needed to meet the objectives, with the approval of Regional Office, Bhopal.

14. The exploitable girth of tree species and period of felling cycle shall not be lower than the approved in previous working plan.

15. In the vicinity of Nalas and water bodies felling shall not be undertaken.

16. Felling shall not be undertaken near the known resting places of wild animals.

17. Thinning of dead, dying and diseased trees will be undertaken under the supervision of an officer not below the rank of Assistant Conservator of forests.

Wp approval

26/12/13

18. All kind of felling including that of dead, dying and diseased trees and for granting of right and concession as well as all illicit felling should be compiled along with the estimation of their stand volumes as per the same volume table used for the assessment of growing stock. This report shall be prepared annually working circle and compartment wise by the territorial DFO and shall be submitted to the C.F, Working Plan for this purpose with in 02 months of the end of control year. Such removal shall be accounted for against the prescribed felling yield of the relevant year.

19. To ensure sustainable management of Non Timber Forest produce, scientific assessment of estimated quantity has to be done before their removal as per the prescription of Working Plan.

20. Status of rare, endangered and near extinct species shall be monitored closely and adequate measures will be taken for their protection and conservation.

21. Execution of Working Plan shall be in conformity with the National Forest Policy.

22. A definite plan has to be made remove encroachment and plant the vacated area by panting suitable local species.

23. Eco-tourism shall be undertaken on sustainable basis No permanent structures shall be allowed at such sites. Temporary structures made up of local forest produce may be allowed for public. Such sites will be declared Plastic free zones and these eco-tourism sites will be managed by the forest department as per the prescriptions of the working plan.

24. Demarcation and consolidation of Forest Boundaries will be done adequately.

25. Sincere efforts will be made to find solution of Nagali cultivation and Tahal cutting to protect and conserve forests.

26. To contain damage from fire, adequate arrangements are to be put in place including preparation of Fire Plan.

27. Adequate measures will be taken to regulate grazing and promoting fodder & grasses in non-forest areas.

28. Areas under the jurisdiction of F.D.M.C. Nasik will be work under approved management plan.

29. No tending operations will be undertaken in Protection Working Circle.

30. Cautious approach shall be adopted in collection of NTFP form Protection Working Circle.

31. Proper mechanism is to be placed in an adequate manner to collect NTFPs in sustainable manner.

32. Gregarious flowering of bamboo must be reported to ICFRE and other institutes as mandated and the situation be dealt with standard protocol.

33. Exotic species should not be plant in Plan areas.

26/12/13

Wp approval

34. Reference Map documents and appendices mandated in National Working Plan Code will be incorporated in the Working Plan. Socio-economic survey will be done before ~~in~~ implementation of Working Plan.

35. The Central Government reserves the right to review, modify, withdraw this approval at any time if any of the conditions of approval are not implemented or relevant modification in the working plan is required so a to keep it in conformity with the orders, circulars and guidelines issued by the Central Government or the Apex Court under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy.

Yours faithfully,

Bhandari

(S.K. Bhandari)
Chief Conservator of Forest (Central)

Copy to :

1. The Additional Director General of Forests (FC) Ministry of Environment and Forest Paryavaran Bhawan, CGO Complex, Lodi Road, New Delhi – 110 003
2. The Principal Chief Conservator of Forests, Govt. of Maharashtra, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur-440001.
3. The Chief Conservator of Forests, (Working Plan), Govt. of Maharashtra, Nagpur.

Bhandari

(S.K. Bhandari)
Chief Conservator of Forest (Central)

GOVERNMENT OF MAHARASHTRA

NO. FDM-2013/CR NO. 278/F-2
Revenue & Forest Department
Mantralaya, Mumbai 400032
Date :- 04 January, 2014

SUBJECT: APPROVAL OF WORKING PLAN OF EAST NASHIK FOREST DIVISION WRITTEN BY SHRI. JEET SINGH, IFS AND SHRI. CHANDRAKANT KHADE, IFS FOR THE PERIOD OF 2013-2014 TO 2022-2023

MEMORANDUM :

The undersigned presents compliments to the Principal Chief Conservator of Forests (Production & Management) and, with reference to his letter No. D-14/WP/EAST NASHIK/566/2013-14, Dated 19/09/2013 on the above subject, is directed to convey the sanction of Government of Maharashtra to the Working Plan of EAST NASHIK FOREST DIVISION, Maharashtra State for the period of 2012-13 to 2021-22 prepared by SHRI JEET SINGH, IFS AND SHRI CHANDRAKANT KHADE, IFS.

The Government of India, Ministry of Environment and Forests has already conveyed its approval to the above said working plan vide its letter NO. 12-3/2000(FOR)/2119, Dated 23/12/2013 under certain conditions. These conditions should be strictly followed.

By order and in the name of the Governor of Maharashtra,

Yours Faithfully,

(N.M. Shilwant)
Deputy Secretary
Govt. of Maharashtra

To,

1. **Principal Chief Conservator of Forests, (Production & Management) Maharashtra State, Nagpur.**
2. **Additional Principal Chief Conservator of Forests, (Working Plan Circle-West) Pune.**
3. **Chief Conservator of Forests, (T) Nashik.**
4. **Chief Conservator of Forests, (Working Plan Circle), Nashik.**
5. **Dy. Conservator of Forests, East Nashik Forest Division.**
6. **Select File Desk F-2.**

FOWP

Conservator of Forests
Working Plan
Inward No. 969

INTRODUCTION

This Working Plan deals with the Reserved and the Protected forest areas under the control of East Nashik Forest Division. The Preparation of this plan was started during the tenure of Shri. Jeet Singh, the then Chief Conservator of Forest Working Plan, Division Nashik. The Preliminary Working Plan report of East Nashik Forest Division was prepared by Shri. A. S. Patil, the then Deputy Conservator of Forest East Nashik Division. The P.W.P.R was discussed in February 2009 in State Level Committee meeting and the same was approved subject to the incorporation of certain observations & suggestions. The PWPR prepared by Shri. A.S.Patil, the then Deputy Conservator of forests of East Nashik Division was for the forest areas of East Nashik division & Malegaon sub-division.

As per the instructions given in the meeting of State Level Committee, the preparation of draft plan was initiated by Shri. Jeet Singh the then Conservator of forest Working Plan Division Nashik. He had written most of the chapters of DWP but final shape could not be given to the Plan by him as he was transferred from Nashik. The Stock Mapping of forest areas of East Nashik division which comprises of nine ranges was started in the year 2009. Due to delay in stock mapping works of East Nashik Forests, it was decided at the higher level that Chief Conservator of forest , Working Plan, Nashik should first prepare the draft working plan of East Nashik Forest Division. The draft-working plan of Malegaon sub-division shall be prepared after the submission of draft working plan of East Nashik Forest Division. Dr.Devendranath joined Working Plan Division Nashik as Chief Conservator of Forest on October 25,2011 and he has given final shape to the chapters of Volume I of Draft Working Plan and Appendices of Volume II . After his transfer Shri.H.N.Patil took a charge as Chief Conservator of Forest Working Plan Nashik and he represented the draft Working Plan in State level committee on 27 & 28 November 2012 at Nagpur.In the State level committee meeting the instructions regarding changing of some part e.g.Changing of area of protection working circle and forest right act after scrutinizing of the records from the division office .The Undersigned took charge of Chief Conservator of forest Working

Plan Nashik on 12/02/2013.Having thorough discussion with Shri Shailendra Bahudar , Additional Principal Chief Conservator of Forests ,(Working Plan-West), Pune regarding various prescriptions proposed by Shri Jeet Singh ,Ex-CCF,WP,Nashik and started modifying and making changes in the prescriptions wherever necessary so as to give final shape to DWP of East Nashik Forest Division.

This draft-working plan deals with 1,24371.977 ha of forest area of East Nashik Forest Division for which 10 Working Circles have been proposed and appropriate prescriptions have been given in details.

Besides five main working circles viz Protection Working Circle, Improvement Working Circle, Afforestation Working Circle, Fodder Management Working Circle, Miscellaneous Working Circles, five overlapping working circles i.e. Wild life Overlapping working circle, Joint forest Management Overlapping working circle, Forest Protection Overlapping Working circle, Non-timber forest produce Overlapping working circle and Bamboo Over lapping working circle have been formed to give scientific treatment to 124371.977 ha. of forest areas. The forest areas in the ranges of Kanashi, Kalwan, Umberthan and Surgana have found suitable for plantation and tending operations of coppice growth of teak, so that in future the Division may get valuable & important timber species like teak. It is also observed that the soil and site quality in these ranges is suitable for taking up a good teak plantation. The site quality corresponds to All India site quality IV but in the areas of Umberthan and Surgana forest , it was found that almost entire good areas have been utilized by the local people for Nagali cultivation with a result that natural regeneration on the floor of the forest does not exist. Moreover the local people do not allow the forest department to take up plantation activities in these areas. In the past, efforts were done by the Forest Department to take up plantation programmes in these areas but plantations were damaged by the local people. They stake claim over these lands. It is rather impossible to regenerate these areas either by natural or artificial methods . However , suitable areas in Kanashi and Kalwan ranges can be taken up for the teak plantation, and coppice growth of

teak. These forests will then become economically more valuable. Further, all important suggestions given in the State Level Committee meeting have been incorporated in the draft Working Plan.

Undersigned is extremely thankful to Shri. Shailendra Bahadur, Additional Principal Chief Conservator of forest, Working Plan (West) Pune for providing valuable guidance and suggestions. Undersigned is also thankful to Shri. Shirish Asthana, the then Chief Conservator of forest, Working Plan ,Pune for his valuable guidance. Undersigned is also thankful to Shri. SaiPrakash ,Chief Conservator of Forests, Nashik Circle for his important suggestions and Shri. A. S. Patil and Shri A. M. Vispute, the then Deputy Conservators of forests of East Nashik forest division for giving suggestions and extending co-operation. .Undersigned also acknowledges the cooperation provided by Smt. Pradeepa, Deputy Conservator of Forests ,East Nashik Division .

Undersigned acknowledges and appreciates the hardwork and labour put in by Shri. G. U. Naik, the then Sub divisional forest officer, SOFR, Nashik(now retired), Shri. T. Y. Nikam, Assistant Conservator of forest Working Plan Nashik, Shri. N. M. More, RFO, Shri.S.J.Tamaychekar, RFO, Shri S.D.Vispute, Ranger Surveyor, Shri.S.R.Patil, Surveyor, Smt.S.P.Barve, Surveyor, Shri. S.N.Ahire , Steno-typist and Smt. V.R.Ahire, Forest Guard in preparing the Draft Working Plan.

Date: June 2013
Place: Nashik

(Chandrakant Khade)
Chief Conservator of Forests
Working Plan, Nashik..

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ABBREVIATION USED IN THE PLAN

Sr.No.	Abbreviation	Details
1	A.C.F.	Assistant Conservator of Forests
2	B S I	Botanical Survey of India
3	B H N S	Bombay Natural History Society
4	C.B.O	Cut Back Operations
5	Cft.	Cubic feet
6	cm	Centimeter
7	cm3	Cubic centimeter
8	^{0}C	Degree Centigrade
9	C A I	Current Annual Increment
10	D.F.O	Divisional Forest Officer
11	D.W.P.R.	Draft Working Plan Report
12	Dn.	Division
13	Dy.C.F.	Deputy Conservator of Forests
14	E. G. S.	Employment Guarantee Scheme
15	F.D.A.	Forest Development Agency
16	F.D.C.M.	Forest Development Corporation of Maharashtra
17	F.L.C.S.	Forest Labourers Co-operative Society
18	F.R.H.	Forest Rest House
19	F.S.	Felling Series
20	F.Y.O.	First Year Operation
21	FRI	Forest Research Institute
22	F R L H T	Foundation for Revitalisation of Local Health Traditions
23	g.b.h.	Girth at breast height
24	Ha./ha.	Hectare
25	HAL	Hindustan Aeronautics Limited
26	IFA	Indian Forest Act
27	IV th Y.O.	Fourth Year Operations
28	J.F.M.	Joint Forest Management
29	Kg	Kilogram
30	Km	Kilometer
31	L.P.G.	Liquid Petroleum Gas
32	M.S.	Maharashtra State
33	M3/m3	Cubic-meter
34	mm.	Millimeter

35	Mt.	Meter
36	M A I	Mean Annual Increment
37	N.T.F.P.	Non Timber Forest Produce
38	No.	Number
39	P.B.	Periodic Block
40	P.F.	Protected Forests
41	P.P.O.	Pre Planting Operations
42	P.W.D.	Public Works Department
43	P.W.P.R.	Preliminary Working Plan Report
44	P.Y.O.	Preparatory Year Operations
45	R.F.	Reserved Forests
46	R.F.O.	Ranger Forest Officer
47	S.M.C.	Soil and Moisture Conservation
48	S.O.F.R.	Survey of Forest Resources
49	S.Y.O.	Second Year Operations
50	Spp.	Species
51	Sq.Km.	Square Kilometer
52	Sq.mt.	Square meter
53	Sr.No.	Serial Number
54	Sub D.F.O.	Sub-Divisional Forest Officer
55	T.Y.O.	Third Year Operations
56	TCM	Trench Cum Mound
57	T D C	Tribal Development Corporation
58	Vth Y.O.	Fifth Year Operations
59	VAM	Vermicular Arbascular Microrizha
60	W.C.	Working Circle
61	W.P.	Working Plan
62	W.S.	Working Series

LIST OF THE COMMON TREES, SHRUBS AND GRASSES ETC. FOUND IN THE FORESTS OF EAST NASHIK DIVISION.

Local Name	Botanical Name	Family
1.	2.	3.
Ali	Morinda tinctoria	Rubiaceae
Aliv	Meyna laxiflora	Rubiaceae
Ain(sadada)	Terminalia alata	Combretaceae
Alsi	Dalbergia volubilis	Papilionaceae
Amba	Mangifera indica	Anacardiaceae
Ambada	Spondias pinnata	Anacardiaceae
Amba-payer	Ficus virens	Moraceae
Anjan	Hardwickia binata	Caesalpiniaceae
Apta	Bauhinia racemosa	Caesalpiniaceae
Arjun sadada	Terminalia arjuna	Combretaceae
Asand	Bridelia retusa	Euphorbiaceae
Awalkanti, Aonla	Phyllanthus emblica	Euphorbiaceae
Babul	Acacia nilotica	Mimosaceae
Bakula	Mimusops ellengi	Sapotaceae
Bahawa	Cassia fistula	Caesalpiniaceae
Bakan-Nimb	Melia azadirachta	Meliaceae
Baranga	Kydia calycina	Malvaceae
Bate, Kalasiras	Albizia lebbek	Mimosaceae
Beheda	Terminalia bellirica	Combretaceae
Bel	Aegle marmelos	Rutaceae
Bhilva/Biba	Semecarpus anacardium	Anacardiaceae
Bhoma	Glochidion hohenackeri	Euphorbiaceae
Bija/Bibla	Pterocarpus marsupium	Fabaceae
Bondara	Lagerstroemia parviflora	Lythraceae
Bor	Zizyphus mauritiana	Rhamnaceae
Bothi, Varing	Eriolaena quinquocularais	Sterculiceae

Local Name	Botanical Name	Family
1.	2.	3.
Buralicode	Wrightia arborea	Apocynaceae
Chamol	Bauhinia lawii	Caesalpiniaceae
Chinch	Tamarindus indica	Caesalpiniaceae
Darara	Erythrina suberosa	Papilionaceae
Dhaman	Grewia tilifolia	Tiliaceae
Dhawda, Dhamoda	Anogeissus latifolia	Combretaceae
Gadhpalas, Pangara	Erythrina variegata	Papilionaceae
Gangudi	Grewia tenax	Tiliaceae
Ghatbor	Zizyphus xylopyra	Rhamnaceae
Ghubata	Acacia polycantha	Mimosaceae
Gol, Karamatigol	Trema orientalis	Ulmaceae
Haldu/ Hed	Haldina cordifolia	Rubiaceae
Hirda	Terminalia chebula	Combretaceae
Hiwar	Acacia leucophloea	Mimosaceae
Humb	Miliusa tomentosa	Annonaceae
Ichan (Pandra Khair)	Acacia ferruginea	Mimosaceae
Jambul, Jamun	Syzygium cumini	Myrtaceae
Kad, Kadhai, Kandol	Sterculia urens	Sterculiaceae
Kakad	Garuga pinnata	Burseraceae
Kalakuda, (Kodai)	Wrightia tinctoria	Apocynaceae
Kalamb	Mitragyna parviflora	Rubiaceae
Kalasiras, Bate	Albizia Lebbeck	Mimosaceae
Kansar	Albizia amara	Mimosaceae
Kamala, Kumkum	Mallotus philipensis	Euphorbiaceae
Karanj	Pongamia pinnata	Fabaceae
Kavath	Limonia acidissima	Rutaceae
Khair	Acacia catechu	Mimosaceae

Local Name	Botanical Name	Family
1.	2.	3.
Safed Siras	Albizzia procera	Mimosaceae
Kuda (Safed)	Holarrhena antidysentrica	Apocyanaceae
Kumbhi	Careya arborea	Lecythidiaceae
Kuda	Wrightia tinctoria	Apocyanaceae
Kusum	Schleichera oleosa	Sapindaceae
Mango	Mangifera indica	Anacardiaceae
Medsing	Dolichandron falcata	Bignoniaceae
Modhal,Moi	Lannea coromandelica	Anacardiaceae
Modwak	Kydia calycina	Malvaceae
Mokha	Schrebera swietenioides	Oleaceae
Neem/Nimb	Azadirachta indica,	Meliaceae
Nilgiri	Eucalyptus camaldulensis	Myrtaceae
Palas	Butea monosperma	Fabaceae
Pangara	Erythrina stricta,	Fabaceae
Papada	Holoptelea integrifolia	Ulmaceae
Payer,Pipri	Ficus amplissima	Moraceae
Phanas	Artocarpus heterophyllus	Moraceae
Ritha	Sapindus laurifolius	Sapindaceae
Sag/Sagwan	Tectona grandis	Verbenaceae
Salai	Boswellia serrata	Burseraceae
Semal	Bombax ceiba	Bombacaceae
Shevga	Moringa oliefera,	Moringaceae
Shindi	Phoenix sylvestris	Palmaceae
Shisam	Dalbergia latifolia	Fabaceae
Shivan	Gmelina arborea	Verbenaceae
Siras (Kala)	Albizzia lebbek	Mimosaceae
Sissoo	Dalbergia sissoo	Fabaceae

Local Name	Botanical Name	Family
1.	**2.**	**3.**
Sonchafa	Michelia champaca	Mognoliaceae
Tendu	Diospyros melanoxylon	Ebenaceae
Tetu	Oroxylon indicum	Bignoniaceae
Tiwas/Tinsa	Ougenia oojeinensis	Fabaceae
Umbar	Ficus racemosa	Moraceae
Wad	Ficus bengalensis	Moraceae
Wagat	Capparis zeylanica	Capparaceae
Waras/Varas	Heterophrasma quadriculata	Bignoniaceae
SHRUBS		
Achra	Dyschoriste dalzelli	Acanthaceae
Ambadi	Hibiscus aculeatus	Malvaceae
Amoni	Rhus mysorensis	Anacardiaceae
Anantvel	Hemidesmus indicus	Asclepiadaceae
Ati, Murudsheng	Helicteres isora	Sterculiaceae
Awal, Tarvad	Cassia auriculata	Caesalpiniaceae
Barkudi	Grewia damine	Sterculiaceae
Bharangi	Chlorodendron serratum	Verbenaceae
Bhui ringni	Solannum xanthocarpus	Solanaceae
Bor	Zizyphus mauritiana	Rhamnaceae
Chandrajyoti	Jatropha curcas	Euphorbiaceae
Chanyabor	Zizyphus nummularia	Rhamnaceae
Chillar	Caesalpinia decapetala	Caesalpiniaceae
Shembarati	Acacia pennata	Mimosaceae
Chillari	Acacia torta	Mimosaceae
Dait,Karmati, Pachurna & Pandharphalli	Securinega virosa	Euphorbiaceae
Dewawali	Cassia sufruticosa	Caesalpiniaceae
Dhaiti	Woodfordia fruticosa	Lythraceae
Gal/Gel	Catunaregam spinosa	Rubiaceae
Gultura/ Ganeri	Lantana camara var	Verbenaceae
Hirna	Indigofera trita	Fabaceae
Henkal	Gymnosperia spinosa	Spinosa-
Jaol	Tamarix dioica	Tamaricacea-

Local Name	Botanical Name	Family
1.	2.	3.
Kadu Jire	Vernonia anthelmentica,	Asteraceae-
Karvand	Carissa congesta	Apocynaceae
Karvi	Carvia callosa	Acanthaceae
Kati Koranti	Barleria prionitis	Acanthaceae
Khirmira	Caseria graveolens,	Flacourtiaceae
Korphad	Indian aloe	Liliaceae-
Madkae	Bombax micranthus	Malvaceae
Nadgi	Pavetta crassicaulis	Rubiaceae
Pandrakuda	Holarrhena antidysentrica	Apocyanaceae
Petuni	Securinega leucopyrus	Euphorbiaceae
Phadya Niwadung	Opuntia dillenia	Euphorbiaceae
Pisola	Artemesia nilagirica	Asteraceae
Ranbhendi	Thespesia lampas	Malvaceae
Rui	Calotropis gigantea	Asclepiadaceae
Tarwad	Cassia auriculata,	Caesalpiniaceae
Toran	Zizyphus rugosa	Rhamnaceae
Velatur	Dischrostachys cinerea	Mimosaceae
Vilayati Erand	Jatropha curcas	Euphorbiaceae
Vowding	Embelia tsjeriam cottam	Myrsinaceae
Yenkal/ Bharati	Maytenus emarginata	Celastraceae
Zingaroot	Urena lobata	Malvaceae
H E R B S		
Agya	Girardinia diversifolia	Urticaceae
Aghada	Achyranthes aspera vari	Amaranthaceae
Ambushi	Oxalis corniculata	Oxalidaceae
Anderphod	Leea macrophylla	Leeaceae
Babli	Heracleum grandis	Apiaceae (Umbelliferae)
Badadha	Arisaema murrayi	Araceae
Ranborat	Echinochloa colona	Gramineae
Barbada	Indigofera cordifolia	Fabaceae (Papilionaceae)
Bohra/ Kaligunj	Cardiospermum halicacalum	Sapindaceae
Borupdi	Indigofera glandulosa	Fabaceae
Buikarvi	Hygrophila serpyllum	Acanthaceae
Buishirid	Euphorbia fusiformis	Euphorbiaceae
Burad/shedya	Paspalidium flavidum	Poaceae
Burandu	Ageratum conyzoides	Asteraceae
Chichur-kanda	Habenaria grandifloriformis	Orchidaceae

Local Name	Botanical Name	Family
1.	2.	3.
Chidsi/ Chimandara	Eragrostis unmioboides	Gramineae
Corata	Barleria lawii	Acanthaceae
Dador	Sesbania bispinosa	Fabaceae
Dagadipala	Tridax procumbens	Asteraceae
Dongarjeera	Pimpinella heyneana	Apiaceae
Gatrack	Boerhavia diffusa	Nyctaginaceae
Gokhru	Tribulus terrestris	Zygophyllaceae
Gomett	Solena amplexicaulis	Cucurbitaceae
Haryakand	Geodorum demiflorum	Orchidaceae
Jalmukhi	Rotala densiflora	Lythraceae
Kachquiri/ Kawitch	Mucena pruriens	Fabaceae (Papilionaceae)
Kal-lavi	Gloriasa superba	Lilliaceae
Kangani	Solanum nigrum	Solaraceae
Khorpad	Aloe-vera	Lilliaceae
Khurasini	Guizotia abyssinica	Asteraceae
Medwan	Dioscorea oppositifolia	Dioscoreaceae
Phat-phati	Crotalaria filipes	Fabaceae
Pivla dhotra	Argemona mexicana	Papaveraceae
Pivli tilwan	Cleome viscosa	Capparaceae
Rangas	Crotalaria medicaginea	Fabaceae
Ranjenda	Zinnia peruviana	Asteraceae
Rankel/ Kawder	Ensete superbum	Musaceae
Tarota	Cassia tora	Caesalpiniaceae
C L I M B E R S		
Amarvel	Cuscuta reflexa	Cuscutaceae
Aradhashish	Ventilago denticulata	Rhamnaceae
Bandgul	Dendrophthoe falcata	Loranthaceae

Bokadvel/ Ghatmol	Aspidoptrys cordata	Malipighiaceae
Local Name	**Botanical Name**	**Family**
1.	**2.**	**3.**
Butgandivel	Clematis hedy sarifollia	Ranunculaceae
Kadukand	Dioscorea bulbifera	Dioscoreaceae
Kawalvel/ Nivali	Tylophora dalzelli	Asclepiadaceae
Mahulvel	Bauhinia vahlii	Ceasalpiniaceae
Mukani/ Ranudid	Vigna radiata	Fabaceae
Palasvel	Butea superba	Fabaceae
Ramdatan	Smilax macrophylla	Liliaceae
Randhodka	Luffa acutangula	Curcurbitaceae
Sathawari	Asparagus recemosus	Liliaceae
Toran	Zizyphus rugosa	Rhamnaceae
G R A S S E S		
Balgadhan	Cyperus rotundus	Gramineae
Belakuda	Eragrostis tenella	Gramineae
Fulora	Themeda quadrivalvis	Gramineae
Gavati Chaha	Cymbopogon citratus	Gramineae
Goundwel	Andropogon pumilus	Gramineae
Haryali	Cynodon dactylon	Gramineae
Kahandol	Chrysopogon fulvus	Gramineae
Kalikusali/ Kusal	Heteropogon contortus	Gramineae
Kasti	Bambusa arundinacia	Gramineae
Kathara	Bothriochloea pertusa	Gramineae
Kunda	Ischaemum pilosum	Gramineae
Manvel	Dendrocalamus strictus	Gramineae
Marvel	Dichanthium annulatum	Gramineae
Mesi	Chloris barbata	Gramineae
Paonya	Sehima sulcatum	Gramineae
Rosha	Cymbopogon martinii	Gramineae
Shedya	Sehima nervosum	Gramineae
Thuda	Ischaemum rugorum	Gramineae

PART - I

SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED

CHAPTER – I

THE TRACT DEALT WITH

SECTION 1: NAME AND SITUATION

I.1.1 This Working Plan covers the forest area of East Nashik Forest Division. The total forest area of East Nashik Forest Division as per Form No. 1 is 135449.826 ha. This area is distributed in Nandgaon, Dindori, Kalwan, Niphad, Chandwad, Yeola, Deola and Surgana talukas of Nashik district .It lies between latitudes 19^0 57' & 20^0 52' North and Longitudes 73^0 16' & 74^0 56' East of geographical co-ordinates. The boundaries of the tract dealt with are given below.

North-West : Gujarat state

North-East : Malegaon Sub division and Jalgaon district

East : Aurangabad district

South : West Nashik Forest Division

I.1.2 This working plan replaces the working plan of Mr.B.P. Singh, D.Y Deshmukh and A.K.Misra for East Nashik Forest Division for the period of 2002-03 to 2011-2012.

SECTION 2 : CONFIGURATION OF THE GROUNDS

I.2.1 The forest in this tract are located on a number of chains of hills whose direction is either from West to East or South-West to North-East. Most of these hills are branching off from western ghat and running in eastern direction. The elevation of these hills is higher towards west as compared to east. The important hill range running through division is Satmala. The Satmala range runs across the district. Its highest peak is at Dhodap which is at the height of 1451 mt. The famous Saptashringi temple lies in this range. The area is drained through the rivers-Girna, Godavari, Maniad and Punad.

SECTION 3 : GEOLOGY, ROCKS AND SOIL

I.3.1ROCKS: The Great Trap region of the Deccan covers the whole district. It is entirely of volcanic formation. The volcanic portion consists of compact, stratified basalts, and an

earthy trap. The basalts are the most conspicuous geological feature. To the west they lie in flat-topped ranges, separated by valleys, trending from west to east. In some flows the – basalt is columnar and then it weathers into the fantastic shapes. The formation at the base of the traps is chiefly amygdaloidal, containing quartz in vertical veins, crystals and zeolitic minerals, especially apophyllite weathering into a gray soil. The absence of laterite, which caps the summits of the hills to the south, is a curious feature in the geology of the area. The basalt is either fine textured or it is coarse and nodular.

I.3.2 SOILS : As regards the soil, the valleys are filled with disintegrated basalt of various shades from gray to black, washed down by rain. It is of argillaceous nature. This soil is not favourable to the growth of large trees but it is very fertile for cereals and pulses. The black soil contains high alumina and carbonates of calcium and magnesium with variable amounts of potash, low nitrogen and phosphorus. The red soil is less common and is suitable for cultivation under a heavy and consistent rainfall.

I.4.2 ECONOMIC MINERALS : Lime nodules and Kankar are found practically all over the district. The lime nodules yield a very good lime, slightly hydraulic, but not sufficiently so to be used under water. Mixed with pounded bricks and sand it forms a fair mortar. The trap rock is very useful for building purposes .

Occurrence of iron is reported near Bhadra in the Surgana mahal. The deposits consist of magnetite and limentite sands occurring in sporadic patches, but it is not of any economic significance.

SECTION 4 : CLIMATE AND RAINFALL

I.4.1 CLIMATE: The climate is generally hot and dry. Summer, monsoon and winter seasons are experienced during the period from March to May, June to September and October to February respectively.

I.4.2 TEMPERATURE: The temperature of the region varies between 6.2^0 C to 42^0 C. May is the hottest month during which the day temperature reaches up to 42^0 C in eastern parts. With the onset of South-West monsoon, day temperature decreases sharply and weather becomes pleasant. Night temperature decreases rapidly after September. December is the coldest month. Summer is the driest season when humidity drops down considerably. The detail of the minimum and maximum temperature recorded in the region is given in **Appendix I,I:1**

I.4.3 RAINFALL : Most of the annual rainfall is received from south-west monsoon during the months from June to September. During May and October, some rainfall in the form of thunder showers also occurs. The average annual rainfall is 1000 mm. In general, the rainfall decreases from the west towards the east due to local topographic variations. The rainfall in this tract varies considerably. The average monthly rainfall recorded at various stations is given in **AppendixI,I:2** .

SECTION 5 :WATER SUPPLY

I.5.1 There are two major rivers - Girna and Godavari along with their tributaries. The Girna river rises just south of Cherai village at about 8 km south-west of Hatgad in Sahyadris and flows in eastern direction. Several dams have been constructed across it mainly for the purpose of irrigation. The Girna in its upper course receives several rivers tributaries such as Tambdi, Punad, Panjan and Maniad.

I.5.2 The Godavari is considered a very pious river for peninsular India. It originates from western side of Trimbak. Its main tributary in the division is Kadva river which originates from Sahyadris in the north-east of Dindori . Many irrigation dams of considerable importance have been built on it. Other tributaries of Godavari are Unanda, Dev, Gui etc.

I.5.3 Addition to these rivers, there are several wells and tanks which supply water for irrigation and drinking .The list of important wells is given in **Appendix I,I:3**

SECTION 6 : DISTRIBUTION OF AREA

I.6.1 The total forest area of the East Nashik Forest Division as per Form No. 1 is 135449.826 ha. Out of this, 133048.569 ha. is reserved forest, 1938.333 ha. is protected forest and 462.924 ha. is unclassed forest. FDCM has been allotted a reserved forest area of 11077.849 ha.The net forest area with East Nashik Division is 124371.977ha.

Area Statement of East Nashik Forest Division

Sr No.	Range	Reserved Forests(ha)	Protected Forests (ha)	Unclassed Forests (ha)	Total forests (ha)	Area with forests FDCM(ha)	Net forests Area(ha)
1	Umbarthan	11792.296	512.594	0	12304.890	0	12304.890
2	Surgana	12671.531	1062.048	0	13733.579	0	13733.579
3	Kanashi	17799.099	146.950	24.290	17970.339	4453.874	13516.465
4	Kalwan	19087.598	0	0	19087.598	3354.196	15733.402
5	Deola	9564.844	1.900	65.050	9631.794	0	9631.794
6	Dindori	13243.981	3.611	155.899	13403.491	3269.779	10133.712
7	Chandwad	10120.819	16.310	125.585	10262.714	0	10262.714
8	Nandgaon	26903.372	115.830	37.710	27056.912	0	27056.912
9	Yeola	11865.029	79.090	54.390	11998.509	0	11998.509
Total		**133048.569**	**1938.333**	**462.924**	**135449.826**	**11077.849**	**124371.977**

SECTION 7 : STATE OF BOUNDARIES

I.7.1 The Reserved forest area has been demarcated both by cairns and pillars. The cairns are pillars of stones of size 1.21 mt diameter at base, 0.76 mt diameter at top and 1.06 mt in height. Some of the boundaries are demarcated by natural features such as rivers, nallas, roads etc. At most of places, boundary pillars are in good condition. However, large scale encroachments are leading to destruction of boundary pillars at certain places. The division had taken up the work of erecting the cement concrete pillars in the year 2002-03, now it is mostly done through cairns. A large number of cairns are required in Surgana Taluka due to circuitous nature of the boundary. The detail of the length covered with cement concrete pillars is as follows.

Sr.No.	Year	No. of Pillars Erected	Length Covered(Km)
1	2002-03	593	40.820
2	2003-04	28	3.692
3	2004-05	0	0
4	2005-06	734	42.620
5	2006-07	0	0
6	2007-08	315	21.00
7	2008-09	0	0
8	2009-10	0	0
9	2010-11	133	7.00

Total	1803	115.132

SECTION 8 : LEGAL POSITION

I.8.1 The Above Ghat Forests were declared as Reserved Forest between 1883 to 1928 by several notifications. The list of notifications is given in the Appendix I.I.7. Among the below ghat forests, Baragaon Dang's forests were constituted as reserved forest during the year 1885 by Government Notification No. 785 dated 27/01/1885. The Protected Forests lying in between them were so constituted in the year 1886 vide G.R. No. 7211 dated 11-10-1886. Shribhuwan forests were declared as reserved forests vide .G.R No. 334 dated 14-1-1887 and the protected forests falling between them were constituted vide G.R. No. 8453-24 dated 6-7-1932. Ex-Surgana state forests were under management of the chief of Surgana estate till 1949. After the merger of the estate with the Union of India, Indian Forest Act, 1927 was made applicable and notification under section 4 of IFA 1927 was issued vide No. 535-11-43500 dated 16-9-1949, notifying the forest areas intended to be constituted as reserved forests. Settlement was, however , completed by 1961 and the entire forest areas under Surgana estate was constituted as reserved forest vide Notification No. B.H.S. 2063/iii-2202-E dated 8-1-1963.For the remaining protected forest, the notification to declare it under section 4 of Indian forest Act 1927 is in process.

SECTION 9 : RIGHTS AND CONCESSION

I.9.1 There is no right and concession allowed in reserved forest area except the right of way and access to water source. However, certain privileges have been granted in this area, the detail of which is given below.

GENERAL PRIVILEGES:These privileges are enlisted in Para 132 of BFM (Vol. III). The detail of these privileges is given below:

(1) No one will be prohibited from drawing water from forest in cases where it is not available elsewhere within a reasonable distance.

(i) No charge will be made under section 55 of the Land Revenue Code for the provision of water for agriculture purpose from any stream, and other sources of water in forest areas on which no expenditure has been incurred by the Govt.

(ii) No fee will be levied when permission is granted for digging wells or channels in forest areas for agriculture purpose.

(iii) Permission will be given freely for the clearance for choked up tanks and channels and for the removal of any forest growth obstructing the flow of water.

(2) Villagers having right of way to water through forest are entitled to a path 50 feet wide which they may fence with thorns obtainable free of charge on application to the D.F.O. The villagers are also allowed to keep such paths free of all undergrowth.

(3) Free grazing in open forests under passes issued by the revenue dept. for village cattle. This concession is subject to restrictions of admission as laid down in the grazing rules in force.

(4) No forest will be closed to grazing within a quarter of a mile (0.4 km) of a village site.

(5) Access to the grazing areas in the interior will be granted by the allotment of sufficiently wide short cut approach roads. These short cut cattle path leading through closed forest to open forest will be marked by the forest department in order to facilitate fencing by the villagers in the manner indicated in Para 3 above.

(6) Removal of stones and earth, from places approved by the DFO, for the gatherer's own domestic or agricultural use.

(7) Removal of fallen leaves and grass for the gatherer's own bonafide agricultural and domestic use.

In case of destruction of houses by fire in forest area, timber of inferior species required for temporary huts will be made available with the utmost care by the RFO on production of a certificate from the Mamlatdar concerned up to a value of Rs 10 .

I.9.2 SPECIAL PRIVILEGES:

Special privileges for entire Nashik District :

(1) For personal domestic use and for agricultural implements , villages can remove on their head the dried and fallen wood.

(2) Removal of karvi for domestic use.

(3) Cut up and removal of grass and also minor forest produce from all kinds of forests (Ending closed Forest)

(4) Villager can take certain fruits viz. Amba, Chinch, Umber, Awli, Karvand and Jambhul from forest areas of Surgana.

(5) For rab burning trees from forest within 100 feet from agricultural fields can be felled.

Special privileges for Kalwan and Nandgaon :

(1) Cutting and removal of grass for sale except from kurans where it has been the practice to sell the grass annually. The grass may be cut from the unclosed forest and with the permission of the forest officer from the closed forests.

(2) Removal of khari earth and fallen or dead teak leaves from forest after taking permission from forest officer.

(3) Collection of wax, honey, grass and wild fruits expect hirda and edible roots. Hirda nuts and moha flowers are strictly reserved.

(4) Removal of fallen deadwood for the gatherers' own use from the unclosed portions of the reserved forests and with the permission of the forest officer from the closed portions. No axes will be permitted to be carried in reserved forests and no branches of the trees will be allowed to be broken.

(5) Removal of khirmani Oman.

(6) Removal of karvi for agricultural purposes

(7)

1.9.3 SPECIAL PRIVILEGES FOR DINDORI TALUKA:

(1) Cutting and removal of reeds in addition to grass and dead leaves allowed under general privilege for use of rab. No lopping of trees is allowed for this purpose.

(2) Removal of fallen dead wood for the gatherers' bonafide domestic use only.

(3) Collection and removal of minor forest produce for the gatherers' own use. However, hirda and moha flowers are strictly reserved.

(4) Removal of karvi for agricultural purposes.

(5) Pasturing of cattle in Reserved and protected forests(As per Rule of Bombay Forest Rules, 1942)

Rule 40:- Pasturing of cattle in forests prohibited except in areas specially assigned and except under a permit- No person shall pasture cattle in a reserved or protected forest—

(a) except within the areas assigned for such purpose by or under the orders of the Commissioner or the Conservator of Forest, and

(b) without obtaining a permit from a Revenue or Forest Officer which shall be granted on payment of the conditions subjects to which such permit has been granted. .

CHAPTER – II

FOREST FLORA

SECTION 1: TREES

2.1.1 It has been estimated that there are approximately 5200 species of flowering plants and ferns in state of Maharashtra . Out of this 1652 species have been found in Nashik district. Some of the endemic and red data plant species found in Nashik district *are Achyranthes, nashikensis, Alysicarpus salim ali, Aspidopteris canarensis, Barleria gibsonoides etc.*

SECTION 2 : GENERAL DESCRIPTION OF THE GROWING STOCK

2.2.1 The forests of East Nashik division have been broadly divided into three types according to three different zones on the basis of variations in climate and topography. These three main types alongwith their sub-types are described as follows :

1) Sub Group 3A - Southern Tropical Moist Deciduous Forests :
   i) $3A/C_1$ - Moist Teak Bearing Forests (Tectona, Terminalia, Wrightia sub type) and Tectona, Anogeissus, Butea, Carissa sub-type.
   ii) Southern Moist Mixed Deciduous Forest - (Terminalia, Anogeissus, Emblica sub-type and Garruga, Lannea, Carvia, Hetrophagma sub-type.

2) Sub Group 5A- Southern Tropical Dry Deciduous Forest :

   i) $5A/C_1/5A/c_{1b}$ - Dry Teak Bearing Forest and Dry Teak Forest.
   ii) Southern Dry Mixed Deciduous Forest.
   iii) $5A/E_4$ - Hardwickia Forest

3) Sub Group 6A - Southern Tropical Thorn Forests :
   i) $6A/C_1$ - Southern Thorn Forest.

2.2.2 SUB GROUP $3A/C_1$ - SOUTHERN TROPICAL MOIST DECIDUOUS FORESTS : These are high forests in which trees are growing mostly over 20 mt. in height and are confined mainly to hilly terrain of Surgana Taluka. Teak is dominant species and occupies major portion of the canopy. The rest of the canopy is covered by miscellaneous associates. Main species of bamboos seen are Kasthi (Bambusa

arundinacea) and Manvel (Dendrocalamus strictus). The evergreen shrubs of Karwand (Carissa congesta) is acting as soil cover. Regeneration is conspicuously absent or sparsely seen due to Nagli cultivation, uncontrolled grazing and repeated fires. Average precipitation is around 2000 mm. spread over 60-70 days in a year. Temperature varies from 10^0 C to 43^0 C. The general floristic are :

I) **Top Canopy** : Most dominant is teak (Tectona grandis). Its associates are Sadada (Terminalia alata), Dhawda (Anogeissus latifolia), Bondara (Lagerstroemia parviflora), Shisam (Dalbergia latifolia), Hed (Adina cordifolia), Kalam (Mitragyna parviflora), Bija (Pterocarpus marsupium), Semal (Bombax ceiba), Siras (Albizzia lebbek) and (Albizzia procera), Beheda (Terminalia bellirica), Chamol (Bauhinia lawii) etc.

II) **Second Storey** : Consists of Tiwas (Ougenia oojeinensis) Baranga (Kydia calycina), Aonla (Phyllanthus emblica), Humb (Miliusa tomentosum). Khirmira (Elaedendron glaucum), Apta (Bauhinia racemosa), Ambada (Spondias pinnata), Aliv (Meyna laxiflora), Palas (Butea monosperma) etc.

II a) **Bamboo** : Both Kasthi (Bambusa arundinacea) and Manvel (Dendrocalamus strictus) bamboo occur. The Kasthi bamboo had flowered during 2007-08.

III **Under Storey** : Consists of mainly Murudsheng (Helicteres isora), Karwand (Carissa congesta), Kuda (Holarrhena antidysentrica), Karvi (Carvia callosa) etc.

III a) **Grasses :** Common grasses are Balgadhan (Cyperus rotundus), Belakuda (Eragrostis tenella), Thuda (Ischaemum rugorum), Harali (Cynodon dactylon), Kathara (Bothriochloea pertusa) and Shedya (Sehima nervosum).

IV) Common climbers are Palasvel (Butea superba), Toran (Zizyphus rugosa), Chillar (Caesalpinia decapetala), Ramdatan (Smilax macrophylla) and Mahulvel (Bauhinia vahlii)

2.2.3 TEAK FORESTS : Variation in quality classes are noticed. Well drained deep soil on gentle slopes support quality-II (21.3m to 27.4m) stand. Flat areas with slightly shallow soils and areas on above hill slopes are covered with quality III (15.2m to 21.3m) stands. Teak is uniformly distributed all over these forests . The

existing growing stock is badly malformed due to injuries by human being by way of lopping and fires and also due to illicit felling of best stems. Regeneration is very sparse.

2.2.4 SUB GROUP 5A : SOUTHERN TROPICAL DRY DECIDUOUS FORESTS : This can be divided on the basis of local variations as follows :

2.2.5 DRY TEAK BEARING FORESTS (5A/C_1): These forests are situated in moderate rainfall (50 to 70 cm) areas. Most of the areas are blank or under-stocked. Trees are small and stunted. These forests have been subjected to illicit cutting, over grazing and frequent fires which has degraded its quality. Due to excessive biotic pressure xerophytic species such as Sathawari (Asparagus recemosus), Korphad (Indian aloe), Sabar (Euphorbia ligularia), Phadya Niwadung (Opuntia dilleni), Jaol (Tamarix dioica), Bhui ringni (Solanum xanthocarpus), Vilayti erand (Jatropha curcas) are seen prominently. These forests are situated in Dindori and Kalwan Talukas of the division. Following sub-type is met within these forests (i.e. Dry Teak bearing forests 5A/C1):

2.2.6 DRY TEAK FOREST (5A/C_{1b}) : This sub-type is found in western side of the Dindori Range and is confined to flat and undulating areas where the depth of the soil is good. Forests are of poor quality and in general are seen under-stocked and blank. Density is below 0.4. Regeneration of teak is poor or absent.

2.2.7 GENERAL FLORISTIC :

I) **Top Canopy :** Teak (Tectona grandis), Dhawda (Anogeissus latifolia), Sadada (Terminalia alata), Beheda (Terminalia bellirica), Modhal (Lannea coromandelica), Kakad (Garuga pinnata), Bibla (Pterocarpus marsupium), Varas (Heterophrasma quadariculata), Bondara (Lagerstroemia parviflora), Kalam (Mitragyna parviflora), Kumbhi (Carea arborea), Salai (Boswellia serrata), Jambul (Syzigium cumini) & Mango (Mangifera indica).

II) **Second Storey** : Palas (Butea monosperma), Tendu (Diospyros melanoxylon), Apta (Bauhinia recemosa), Medshing (Dolichandrone falcata), Kuda (Writia tintoria), Karanj (Pongamia pinnata), Aonla (Phyllanthus emblica), Bor (Zizyphus mauritiana), Bahava (Cassia fistula), Hiwar (Acacia leucophloea), Babul (Acacia nilotica), Khair (Acacia catechu), Ghatbor (Zizyphus xylopyra) etc.

II)a **Bamboo** : sparse or absent.

III) **Shrubs** : Karwand (Carissa congesta), Gultur (Lantana camara), Tarwad(Cassia auriculata), Dhayati (Woodfordia floribunda) etc.

IV)a **Herbs** : Buranda (Blumea lacera) and Tarota (Cassia tora).

IV)b **Grasses** : Kusal (Heteropogon contortus), Rosha (Cymbopogon mondini), Marvel (Dichanthium annulatum), Kuda (Ischemuma pilosum) etc.

V) **Chillar** : Caesalpinia seppiaria.

2.2.8. HARDWICKIA FOREST (5A/E_4) : This type of forests occur in Nandgaon taluka of East Nashik Forest Division, where rainfall is low (350 to 500 mm.). The forest is mostly under-stocked and blank. The area is over grazed and existing growth is stunted and malformed. The proportion of xerophytic species is high. The density is below 0.4. Grassy blanks and rocky outcrops are often seen. The forests being scattered and surrounded by and adjacent to agricultural fields, are subjected to illicit felling, over grazing and encroachments.

2.2.9 GENERAL FLORISTIC :

I) **Top Canopy** : Anjan, Modhal, Kakad, Bondara, Kadhai

II) **Second Storey** : Albizzia, Dhaman, Dhawda, Salai, Khair, Tendu, Apta, Palas, Ghatbor, Aonla & Bel etc.

IIa) **Bamboo** : Absent.

III) **Shrubs** : Henkal, Amoni ,Sabar, , Tarwad.

IVa) **Herbs** : Tarota, Unhali, Buranda.

IVb) **Grasses** : Kusal, Fulora

V) **Chillar** : Chillar

2.2.10 SOUTHERN TROPICAL THORN FOREST (6A/C_1): This type of forest is situated in Chandwad , Nandgaon and Yeola talukas where rainfall is very low (below 500 mm) and erratic. The forests are mostly blank and are situated in poor sites having shallow soil depth. Areas are over grazed and hacked and hence xerophytic ecological association is found. The growing stock is very stunted and malformed. The trees have short bole. The density is below 0.4 and grassy blanks and rocky out crops are common. The grasses are usually of poor quality due to poor soil. Regeneration of the main species is very poor. The general floristic are as follows :

I)	**Top Canopy**	:	Not found.
II)	**Second Storey**	:	Sadada, Dhawda, Khair etc.
IIa)	**Bamboo**	:	Absent.
III)	**Shrubs**	:	Henkal, Amoni, Hiwar, Karwand, Tarwad, Gultura, Bor, Sabar, Nagphani/ Phadya Niwadung etc.
IVa)	**Herbs**	:	Tarota, Gokhoru
IVb)	**Grasses**	:	Kusal, Tambadgota, Rosha, Phulora etc.

Gaussen Classification :- Gaussen, by taking six parameters like hypsometry, geology, soil types, bioclimates, land use and potential vegetation has classified East Nashik Forests into two series.

(A) Zone Littorale et Sols Sales- Littoral Zone and Saline Soils

A/2 – Salt Swamp

A/4- Halophilous Pseudo-Stalophilous Sseudo-Steppe

(B) Types Secs- Dry Types

B/1- Albizzia Amara and Acacia Series

B/6- Savanna Woodland

B/8- Low Scattered Shrub

B/2- Acacia and Capparis Series

B/11- Low Scattered Shrub

B/3- Anogeissus- Chloroxylon- Albizzia Amara Series

B/14- Discontinuous Thorny Thicket

B/15- Low Scattered Shrub

B/16- Pseudo-Steppe and Barren Soil

B/4- Acacia and Anogeissus Series

B/17- Savanna Woodland

B/18- Low Scattered Shrub

B/19- Pseudo-Steppe and Barren Soil

B/5 – Hardwickia- Anogeissus Series

B/21- Discontinuous Thorny Thicket

B/6- Anogeissus- Terminalia-Tectona Series

B/24-Dry Deciduous Forest

B/25- Savanna Woodland

It is based on assumption that the different physiognomic stages of vegetation encountered in the region leads to a same forests type and it goes to form a series of vegetation. The final maximum stage of the series is called plesioclimax. It is thus defined as a stage which a given plot of vegetation would achieve in a sufficiently long period of time, without human interference. This classification of vegetation map indicates the potential vegetation that can exist on that area.

(A) Zone Littorale et Sols Sales- Littoral Zone and Saline Soils

A/2 – Salt Swamp, A/4- Halophilous Pseudo-Stalophilous Sseudo-Steppe:- It is identified

in the following ranges (i) Deola(ii) Chandwad (iii) Nangaon (iv) Yeola.

(B) Types Secs- Dry Types

B/1- Albizzia Amara and Acacia Series B/6- Savanna Woodland B/8- Low Scattered

Shrub:- It is identiied in the following ranges (i) Nandgaon (ii) Yeola.

B/2- Acacia and Capparis Series B/11- Low Scattered Shrub:- It is identified in the following ranges (i) Nandgaon (ii) Yeola

B/3- Anogeissus- Chloroxylon- Albzzia Amara Series B/14- Discontinuous Thorny Thicket

B/15- Low Scattered Shrub, B/16- Pseudo-Steppe And Barren Soil:- It is identified in the

following ranges (i) Surgana (ii) Umberthan (iii)Dindori (iv)Yeola.

B/4- Acacia And Anogeissus Series, B/17- Savanna Woodland, B/18- Low Scattered Shrub

B/19- Pseudo-Steppe And Barren Soil:- It is identified in the following ranges(i)Surgana

(ii) Umberthan (iii)Dindori (iv)Kalwan (v) Kanashi (vi)Deola (vii)Chandwad

B/5 – Hardwickia- Anogeissus Series, B/21- Discontinuous Thorny Thicket :- It is identified

in the following ranges (i) Kalwan (ii) Kanashi (iii)Dindori.

B/6- Anogeissus- Terminalia-Tectona Series, B/24-Dry Decidous Forest,B/25-Savanna

Woodland :- It is identified in the following ranges (i) Surgana (ii) Umberthan .

SECTION 3: STATUS OF NATURAL REGENERATION:

2.3.1 Status of natural regeneration is moderate to poor in this area .Some of the local practices such as uncontrolled grazing , tahal cutting and rab burning, encroachments and forest fires have adversely affected the natural regeneration. Grazing animals trample the young seedlings that come after rainy season. In tribal belt, people clean the forest area in rotation for agricultural crops which damages the entire natural regeneration. In spite of this , there is profuse regeneration of teak, ain , khair etc. in some parts of Umbarthan ,Surgana and Kalwan ranges. Similarly, in dry parts of Nandgaon, there is good natural regeneration of neem and anjan . A medicinal shrub - kuda is also seen profusely regenerating in some parts of Deola range.

SECTION 4 : INJURIES TO WHICH THE CROP IS LIABLE

2.4.1 FOREST FIRES : Frequent fires damage the forests to the great extent. The growth of seedling becomes stunted and natural regeneration is destroyed. Damage is also caused to soil by way of burning of leaf litter, the main source of humus for the soil. Repeated fires make soil infertile and prone to erosion. Fires are sometimes accidental but more often these are caused by the local people for various reasons. Usually the grazers set fires to the forests in the hot seasons to get early and succulent grass after the first rains. To facilitate the collection of Moha flowers & fruits, seeds, grasses etc. also the fires are set by the villagers. In Surgana taluka frequent fires have caused great damage to forests which has resulted in malformation of the old standing timber species. This is more common in Ex-Surgana Estate Forests .The information in respect of forest areas burnt during the period 2002-03 to 2011-12 is given in the following table.

YEAR	NUMBER	BURNT AREA	LOSS (in Rs.)
2002-03	47	437.223	55505/-
2003-04	70	577.930	85635/-
2004-05	43	248.750	26375/-
2005-06	64	603.170	62800/-
2006-07	51	374.450	100750/-
2007-08	73	559.600	77150/-
2008-09	49	477.600	59440/-
2009-10	25	152.850	16550/-
2010-11	39	488.400	71900/-

Also, following expenditure has been done on the work of fire tracing.

Table

Sr.No.	Year	Length (Kms)	Exp (in Rs.)
1	2002-03	423.690	205163/-
2	2003-04	912.000	397158/-
3	2004-05	2730.000	15000/-
4	2005-06	1399.600	333000/-
5	2006-07	1720.000	621000/-
6	2007-08	2616.000	997000/-
7	2008-09	1862.000	727000/-
8	2009-10	3234.000	1380000/-
9	2010-11	252.529	398000/-

2.4.2 GRAZING : Grazing is severe and unrestricted in the forest areas due to high cattle population and the forest areas being adjacent to villages . As a consequence of this, there is very sparse or no natural regeneration. Due to absence of soil cover in the form of vegetation or grasses on some of the areas, they have become very prone to erosion. The soil depth in heavily grazed areas is very less and in some places, soil erosion has already taken place and parent rock is seen exposed. Damage due to grazing is mainly from the domesticated cattle. Rangewise information regarding the cattle population as per the latest reports received from East Nashik Forest Division is given in the following table

Table

RANGE	CATTLE POPULATION
Umberthan	10726
Surgana	23175
Kanashi	28402
Kalwan	44063
Deola	40584
Chandwad	109192
Nandgaon	72750
Yeola	77279
Dindori	48651

Total	454872

With increasing pressure on land for cultivation, the areas set aside for grazing also been brought under cultivation. This has increased the grazing pressure on forests. Many of the erstwhile village grazing lands are being cultivated and the cattle have to depend upon whatever is available in the adjoining forests only. The forest in this division, except certain very steep and hilly areas, are accessible to cattle for grazing. Grazing in the forests is a great problem . Such uncontrolled grazing gradually decreases the vegetation cover of the soil and consequently, increases the soil erosion

2.4.3 ILLICIT FELLING : Local villagers fell trees of timber species for their livelihood and for using them as firewood. The forest dwellers generally cut large trees of teak and Sadada to renew their hutment The tress of species such as teak, shisham, ain etc are felled for commercial purpose . This type of commercial felling is noticed mainly along the Gujarat boarder.

2.4.4 TAHAL CUTTING: . In Surgana and Dindori talukas, the villagers are used to practice of rab burning to raise their nurseries for crops like Nagali and Rice. For rab burning, they resort to heavy lopping and sometimes they fell even available timber tree irrespective of their species. Even Teak and superior Injaili trees species also become prey. The local people do not hesitate to do hacking even of the regeneration and coppice shoots of important tree species for rab. Such cuttings is causing great damage to the tree growth.

2.4.5 ENCROACHMENTS : Encroachments have been a serious problem in these areas since long. Unauthorised cultivation and thereby destruction of forest is rampant and measures taken by the Forest Dept. to control it has only limited effect The modus operandi of encroachment on the forest areas is that the offender does the tahal cuttings during April-May, rab burning in small patches of areas of about 0.01 ha in May, seed sowing of Nagali, Wari and Paddy in that patch at the end of May which germinate after onset of rains in June. Germinated seedlings take about 30 to 40 days to become fit for transplanting . In the meantime, field for transplanting seedlings is prepared by ploughing malki land along with adjoining forest areas by making encroachment. Transplanting is carried out in the month of July in field so prepared by making encroachment. The crop matures by the end of September or beginning of October, when harvesting is done. Post harvest operations are generally completed by the end of November. These lands are then left at the mercy of the nature till next rainy

season. In the next year, the same operations are again repeated and in this way year after year some of the forest area is being encroached upon and the extent of the encroachment in surrounding suitable forest areas is extending.

2.4.6 INSECTS & FUNGI : Sporadic attack of teak skeletoniser (Hapalia macheralis) is common, but this is not substantial. An attack of white grab (Holotrichia serrata)and root borers is sometimes seen in Teak seedlings. Damage by fungi is negligible.

FOREST FAUNA

East Nashik Forest Division is rich in fauna. There are variety of mammals, birds ,reptiles and fishes found in this area. Some of them are enlisted below.

SECTION 5: Mammals

2.5.1 Some of the mammals species found in this area as given below.

Panther (Panthera pardus), Hyeana (Hyeana hyeana), Jackal (Canis aureus), Indian Wolf (Canis lupis), Indian Fox (Vulpes bengalensis), Jungle Cat (Felis chaus), Mongoose(Herpests auropunctatus), Porcupine(Hystrix indica), Hare(Lepus nigricallis), Common Langur(Presbytis entellus), Barking Deer(Montiecus mutjak),Chital(Axis axis), Black Buck(Antilope cervicapra), Indian Wild Bore (Sus scrofa), Giant Squirral (Ratufa indica).

SECTION 6: Birds

2.6.1 Many species of migratory and resident birds are found in East Nashik Division. Migratory birds are mostly found near the water bodies of dams and ponds. Nandur Madhameshwer Bird Sanctuary is situated in East Nashik Forest Division on the confluence of Godavari and Kadawa rivers. There are about 240 bird species found in this area.. Out of these about 80 species of birds are migratory. Some of the avifauna found in the division is as given below.

Little grebe (Tachybaptus ruficolis), Little rubber plant (Phalacrocorax niger) , Grey Heron (Ardea cinerea) , Painted Stork (Mycteria leucocephala) , Flamingo (Phoenicopterus rubber) , Common Crane (Grus grus), Hoopoe (Upupa epops) , Common grey Hornbill (Ocyceros birostris) , Golden Oriole (Oriolus oriolus) , Golden Duck (Ruddy shelduck) , Marsh harrier (Circus aeruginosus).

SECTION 7: Reptiles

2.7.1 Some of the reptiles found in this area are as follows.

Common garden lizard (Calotes versicolor), Indian chameleon (Chameleon zeylanicus), Russell's Sand Boa (Eryx conisus), Common Indian krait (Bungarus caeruleus), Indian cobra (Naga naga), Russell's viper (Vipera russelli), Rat Snake (Ptyas nucosus),

SECTION 8: Fishes

2.8.1 Usually fresh water fishes are found in this area. Some of them are as given below.

Cat fish (Aystus gulic), Mureel (Chana gachus), Fresh Water Gobi (Gobius giueeoides) Ompok bimacuistus, Rasbore daniconus, Funtius ticto, Gorra mullya, Labeo calbasa, Chels clupecides, Mystius canvisius, Barilius bendelisis, cirrhins rebe, Aspidoparie moror, Danic malebarius , Mastecembelus armelus, Botia spp., Notopeterus notopterus, Puntius sarana , Puntius freseri , Puntius amphibius , Chande ranga , Parasilorhyncnus prateri , Labeb beggut ,

SECTION 9: INJURIES TO WHICH FAUNA IS LIABLE

2.9.1 The fauna in this tract is under various types of threats. There is a large scale biotic interference in the habitat of wildlife. Local people leave their animals in the forest for grazing. Villagers resort to forest fires in order to scare the animals and protect their agricultural crops. Some of the potential threats to fauna of this area are described below.

2.9.2 HABITAT DESTRUCTION :

Safe and healthy habitat is the fundamental requirement of wildlife. But various illegal activities such as illicit felling, encroachments, forest fires and uncontrolled grazing pose a great threat to the habitat. The destruction of habitat is forcing the wildlife to come out the forest area. Panthers have been found in this area frequently entering the villages and causing the damage out side the forest area.

2.9.3. POACHING :

The destruction of habitat makes the animals vulnerable for poaching. Poor habitat conditions force the animals to come out of forest in search of food and water. They face the severe threat of poaching once they come out of forest area. Further more, the rising demand of wild animal products in the International markets has increased the threat of poaching to wild animals. Certain local communities also hunt the animals such as barking deer, mouse deer and wild boar particularly during the period of festivity.

2.9.4 POISONING :

Wild animals are poisoned for the sake of hunting, protection of crops and human settlements. Local farmers resort to poisoning of wild animals when they enter the

agricultural crops. Many of them use pesticides for killing the wild fauna. Sometimes, contaminated food grains are also used for killing the small wild animals and birds.

SECTION 10:PROTECTION AND MANAGEMENT OF FAUNA

2.10.1 Strict protection of wild fauna and their management is very essential in this area. The Wildlife Protection Act, 1972 and Indian Forest Act, 1927 should be implemented strictly in order to save the wild fauna. The biotic interference in the form of illegal grazing, illicit felling, tahal cutting etc. should be controlled. The staff should regularly sensitize the villagers regarding the importance of wild fauna and ways to protect it. This awareness campaign can help a lot in protection and management of local fauna in this area. Staff should regularly monitor the ponds and nallas which constitute the important habitat of wild animals and birds. The works of habitat improvement in the forest in the form of creating new water holes, planting fruit trees species etc. should be undertaken regularly. Last but not the least, villagers should be regularly paid compensation for the kill of their domestic animals or any injury to human being. Regular census of the wild animals should be carried out in the forest area and its results should be analyzed. Any major deviation in the census data should be viewed seriously.

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CHAPTER – III

UTILISATION OF THE FOREST PRODUCE

SECTION 1 : AGRICULTURAL CUSTOMS AND WANTS OF THE POPULATION

3.1.1 The tract is mainly inhabited by Koli, Varli, Konkani, Bhil, Thakur, Maratha and Patil communities. The Mahadev Koli is the largest tribal community , followed by Kokani Koli. The Mahadev Koli community is concentrated mainly in Dindori, Niphad, and Surgana ; Bhils are confined to Kalwan taluka; and Varlis are settled mainly in Surgana taluka. The total population of the Nashik district as per 2001 census is 49.94 lakhs and the population density is 321.56 per square km .The tribal population of the district is 11.94 lakhs.

3.1.2 Agriculture is the main occupation of the local population . Agricultural population mainly consists of Marathas, Malis, Kolis, Vanjaras, Thakurs, Kathodis and Kokanis. Agriculture being the main occupation in the tract , majority of the population is directly or indirectly engaged in it. In the hilly tract, most of the people practice primitive agriculture. They mostly grow the crops such as nagli, pulses, paddy etc in this area and lop the trees for preparing the nursery of nagli and paddy crops. They have remained more or less indifferent towards progressive agriculture with modern techniques of cultivation and have continued their practice with their traditional methods. After construction of some minor irrigation and percolation tanks in the areas, some cultivators have started raising cash crops such as sugarcane, vegetables, onion, grapes etc wherever irrigation facility is available.

However, the situation is totally different in the plains of the Godavari basin. These lands are highly fertile. Consequently , this belt is very prosperous and the main crops are wheat, sugarcane, onion, groundnut, grapes, vegetables etc.

3.1.3 The main requirement of the people from the forest is firewood, small timber, bamboo, grasses and various types of NTFPs. They need small timber mainly for the preparation and repairs of their cow sheds, carts , wooden-plough and other agricultural

implements. Most of the them are dependent upon firewood for their cooking needs. They also depend on forest for grazing their cattle and collect numerous NTFPs from the forest for their livelihood. The demand for various forest products has increased over the years because of the increase in population of both human beings and animals. This is causing a heavy pressure on the forest causing its rapid depletion.

SECTION 2 : THE MARKET AND MARKETABLE PRODUCTS

3.2.1 There are ready markets such as Nashik, Dhule, Thane, Mumbai and Pune near these areas for sale of forest produce. The existing condition of forest is not able to fulfill the total requirement of these places. There is no major harvesting in this area. Only the illicitly cut and seized material is auctioned. Some wind fallen material is also obtained. The firewood collected by the local population is consumed there itself .

3.2.2 There are many valuable timber species found in this area such as teak ,khair, ain dhawada, haldu etc. The local demand is mainly for small timber and poles of these species. However, in the nearby markets these species are in great demand for furniture and other uses. Fuel wood is the main demand of villagers and some town dwellers also. Dhawada is the most sought after fuel wood in addition to babul and others species. The demand for fuel wood is far more than the supply of it. Therefore illicit felling for fuel wood is seen very frequently particularly by womenfolk through head loads. Other major demand, particularly in tribal belt, is for tahal leaves which they use for raising the nurseries of paddy and nagli. Mostly local people lop the standing trees, collect their dried material and burn it before raising their nurseries. Grass for cattle and packing the vegetables and fruits is also in great demand. In the past, East Nashik Forest Division used to auction these kurans. But now these kurans are with JFM Committees . Nandgaon, Chandwad and Dindori are the potential markets for grasses sold annually on cutting terms. Other Non -Timber Forest Produce found in the tract are Karvi, Apta , Tendu leaves, Moha flowers , fruits of Hirda, Beheda, Kadulimb, Anjan leaves, Rosha grass etc .But presently department is not auctioning these products. Tendu and Apta leaves are sold by tender as per the policy of the Govt. of Maharashtra. Some notified forest products are being marketed by the Tribal Development Corporation also

SECTION 3 : DEMAND & SUPPLY OF FOREST PRODUCE AND PRESSURE ON THE FORESTS:

3.3.1 Most of the people living in and around forest area depend for their demand of small timber, poles, firewood and non timber forest produce on forest. They have been living since generation in proximity of forest. Therefore, traditionally they have been depending for their demand of forest produce on the forest area only. In the tribal belt, most of the people still meet their demand from the forest area only. However, in the plain areas, the dependence of the people on the forest area is much less. They use cooking gas, kerosene, agricultural waste and other substitutes for their day to day needs. Agricultural waste also provides an alternative source of fuel in the villages.

3.3.2 The exact data regarding requirement of the people for forest produce is not available. Similarly it is not known exactly how much of their demand of forest produce is met from the private and forest area. There is large variation regarding the dependence of the people on forest from one area to another within the division.

3.3.3 Forest department extracts timber and fuel wood from the wind fallen trees in the forest areas and sells it at their depots through public auction. A part of this produce becomes available to the local people for their domestic use. Similarly, the non timber forest produce is collected and sold through Tribal Development Corporation. The local population meet their requirement at the time of extraction of this produce. The details of the timber and fire wood extracted by the division during last few years is given below.

Sr. No.	Year	Timber (Cum)	Firewood (Cum)
1	2004-05	81.875	49.000
2	2005-06	136.686	3.000
3	2006-07	169.411	445.425
4	2007-08	72.385	62.908
5	2008-09	106.150	166.229
6	2009-10	114.864	272.302
7	2010-11	101.463	190.066

But the present condition of the forest can not meet out the entire requirement of the local people from forest area. With the increase of the population, the pressure of the local people for the requirement of forest produce is mounting day by day. This pressure is leading to degradation of the forest area .

SECTION 4 : METHODS OF HARVESTING AND THEIR COSTS

3.4.1 Most of the annual coupes are worked departmentally. Tendu and Apta leaves are sold through tenders at the State level. In the past East Nashik Forest Division used to auction grass kurans , but now these kurans are with JFM Committees.. In notified area, non timber forest produce such as Moha flowers, Hirda, Beheda etc. are collected through Tribal Development Corporation.

All the harvesting operations are carried out on daily wages or job work basis .These operations are carried out at the rates fixed by the 'Circle Wage Committee' headed by CCF(T)Nashik. Every year these rates are revised. The copy of the current wage rates is given in the **Appendix I,III :2**

SECTION 5 : LINES OF TRANSPORT

3.5.1 Mumbai to Bhusawal railway line passes through Yeola, Chandwad, Nandgaon Ranges of the tract. Practically no major forest produce, except some minor quantities, is transported through the railway from this tract.

There is a very good network of the roads in the division. These roads are National highway, State highway, District road and Village roads. Most of the forest produce is transported through these roads. The list of important roads is given below.

i) Mumbai- Agra National Highway
ii) Vani -Kalwan Road
iii) Kalwan Deola Road
iv) Vani - Nashik State Highway
v) Surgana - Nashik Road
vi) Surgana- Dharampur Road

The principal mode of transport is through trucks and tractors . However, a small quantity of produce is transported with the help of bullock-carts as well.

SECTION 6 : PAST AND CURRENT PRICES

3.6.1 There is a huge demand of forest produce but its supply is not in commensuration with demand. This gap is increasing year after year which is leading to escalation of prices year after year. The average prices of timber and fuel wood in depot have increased two to three times during last decade depending upon the type of forest produce. The sale results of the forest produce are given in the **appendix I.III.4**

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CHAPTER IV

F.D.C.M. Nashik

SECTION 1 : INTRODUCTION

4.1.1 FDCM'S Nashik project division's Dindori Range falls in the jurisdiction of East Nashik Division. FDCM has been allotted a reserve forest area of 11077.849 ha. for its various developmental activities. The area allotted to the corporation is of comparatively better quality on which they have raised various commercial plantations of teak, bamboo and other species. There is one forest depot at Ozarkhed for sale of various types of forest produce obtained from harvesting operations.

CHAPTER-V

FIVE YEAR PLANS

SECTION 1 : INTRODUCTION

5.1.1 In India, five year plans were started from the year 1951 to have a planned and systematic development of the country. After every five years, a new plan was prepared in which thrust was given to various objectives. Presently, the eleventh five year plan is in progress since 2007 and will end in 2012. Initially, Forest Department laid emphasis on survey and demarcation of the forest areas. Subsequently, high economic value species were introduced for increasing the productivity of the forest. Then fast growing species were introduced to increase the productivity of the forest to meet the local and industrial demands. In seventies and eighties decade, Social Forestry and Massive Afforestation Program gained the prominence. However, the last and the present five year plans have concentrated on conservation of bio-diversity and participatory forest management.

SECTION 2 : FUNDING IN FIVE YEAR PLANS

5.2.1 India has around 19.50 percent geographical area under forest with a rich bio-diversity. However, our large population of human and cattle has put a tremendous biotic pressure on our forest. A large population of cattle is unproductive and grazes freely in the forest. Similarly, the lack of adequate fuel wood resources in the vicinity of the forest and hunger of land among the poor section of the society, has led to a large pressure on forest causing its fast depletion . However, the funding in forestry sector has not been in commensuration with its liabilities. On an average, percentage of outlay to the forestry sector has been less than one percent of the total plan outlay.

SECTION 3 : FORESTRY ACTIVITIES UNDER FIVE YEAR PLANS

5.3.1 After independence, five year plans started in the year 1951. The forests of this tract were managed at that time as per the prescription of Starte's working plan. This working plan mostly recommended clear felling and artificial regeneration of the natural forest. The aim of the management was to convert inferior quality forest into a teak forest with the objective of maximizing the revenue. But this objective could not be achieved as the clear felled areas could not be regenerated fully due to various types of biotic pressures.

5.3.2 Surgana forests were brought under scientific management after the merger of the estate. These forests were managed under selection cum improvement working circle with an objective of improving the value, quality and quantity of growing stock and for the production of high quality timber . However, the objective of management could not be

achieved fully due to perpetual malady of uncontrolled grazing, tahal cutting, encroachments, frequent fires etc in the forest.

5.3.3 In the mean time, East Nashik forest division of FDCM was started in the year 1976. A good quality forest was handed over to that Project Division with an objective of converting miscellaneous forest into a valuable teak forest. Most of this area was artificially regenerated with teak plantations. But these plantations could not bear the pressure of illicit grazing, encroachments etc and hence, these plantations could not establish themselves satisfactorily.

5.3.4 In 1980, the Forest Department took up the massive programme of improvement in grasslands by establishing a separate division of Intensive Development of Fodder Resources (IDFR). Dindori Range of East Nashik Forest Division had plenty of forest area under kuran management. Hence, it was intended to improve the fodder quality and productivity of these areas and give a boost to the occupation of cattle breading and dairy.

5.3.5 Since nineties, these forests are being managed through participatory management of people and by raising artificial regeneration basically through JFM. Government of Maharashtra issued the order for Joint Forest Management in the year 1992, envisaging a paradigm shift in the forest management. The participation of local stake holders was considered as one the most important factors in management of forest. The project continued during most of the period of eighth and ninth five year plan. In the tenth and eleventh five year plans, a new agency called FDA (Forest Development Agency) has been launched which envisages the participatory approach in holistic development of the villages. This scheme is being implemented presently in 57 villages of East Nashik Division. Most of the developmental activities have been converged under this scheme. If implemented in the right spirit, it will definitely help in restoring the trust of the local people.

CHAPTER –VI

STAFF AND LABOUR SUPPLY

SECTION 1 : STAFF

6.1.1 There are nine ranges in East Nashik Forest Division. The East Nashik Division is having its head quarter at Nashik and is headed by a Deputy Conservator of Forest. The present sanctioned strength of field and ministerial staff in the East Nashik Forest Division is as follows :

TABLE – I East Nashik Division

Sr.No.	Name of Post	No of Posts
1	Deputy Conservator of Forest	1
2	Assistant Conservator of Forest	5
3	Range Forest Officer	13
4	Chief Accountant	1
5	Office Supritent	1
6	Accountant	11
7	Surveyor	1
8	Steno	1
9	Jr. Statistics Assistant	1
10	Clerk	17
11	Driver	5
12	Forester	45
13	Forest Guard	172
14	Naik	1
15	Peon	3
16	Watchman	1
17	Mali	1
18	Vanmajur	141
	Total	421

SECTION 2 : LABOUR SUPPLY

6.2.1 Main activities of the forest department in East Nashik Forest Division include afforestation, soil and moisture conservation works and repairs of forest roads & buildings. The activity includes protection measures and collection of illicitly cut timber and firewood and its transportation to depot. There is only one depot in the Division at Wani . Out of these, most labour intensive activities are those related to afforestation, soil and moisture conservation works and fire tracing. The tribal population of Kolis, Bhils, Varlis, and Kathodis, is the main source of labour for these works. On the whole the supply of labour for forestry works is satisfactory. However, sometimes a seasonal shortage of labour is felt. This occurs during planting operations due to its coinciding with the agricultural works .Some shortage of labour is felt in grapes growing areas as the wages offered by them are higher than the government rates. The Forest Department employs labour on the daily wage rates fixed by the government and which are revised in the months of January and July and majority of the job rates are fixed by the Circle Level Wage Board Committee .Few of the job rates are fixed by the Government , under various schemes like MREGS.

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CHAPTER - VII

PAST SYSTEMS OF MANAGEMENT

SECTION 1 : GENERAL HISTORY OF FORESTS

7.1.1. The forest of East Nashik Forest Division has been divided into two parts for the sake of describing the history.

i) Above Ghat Forests
ii) Surgana Forests .

7.1.2 ABOVE GHAT FORESTS : No systematic management was carried out in above ghat forests until 1906-07. Only teak timber from the accessible areas was harvested, stacked at site and sold by public auction . The areas containing Anjan and scrub forests were not subjected to any particular treatment. However the area of Anjan forest was well protected.. Mr. Dodgson wrote the first working plan for the Anjan and scrub jungles of Malegaon, Baglan, Kalwan and Chandwad ranges in the year 1906-07. Since 1906-07, the various working plans under which the forests of the tract were managed are as follows:

I) Working Plan (1906-07 to 1935-36) for Above Ghat Forests by J. Dodgson.
II) Working Plan (1906-07 to 1935-36) for Anjan and Scrub Jungles of Malegaon, Baglan, Kalwan Ranges by Shri. J. Dodgson .
III) Provisional Working Plan (1922-23 to 1935-36) for Nandgaon Taluka forests by B.J. Joshi .
IV) Provisional Working Plan (1922-23 to 1935-36) for part of Malegaon and Baglan forests by J.N. Dutta.
V) Working Plan (1936-37 to 1980-81) for Above Ghat Forests by H.W. Starte
VI) Working Plan (1981-82 to 1995-96) for Above Ghat Forest by J.H. Sankhe.

7.1.3 SURGANA FORESTS : Surgana forests include whole of Ex-Surgana Estate forests, Baragaon Dangs forests and Shribhuwan forests. Surgana Estate forests were managed by Ex-Estate Rulers till December 1948. After abolition of Estates, Jagirs and Inams, these forests got vested in the State Government and were constituted as Reserved Forests under Section 20 of Indian Forest Act vide Notification No. 2062/111-3202-E, dated 9-1-1963.

Baragaon Dangs reserves were originally under the administrative control of Divisional Forest Officer, Surat. Later on it was transferred to Dangs Forest Division for management. On formation of the Surgana Range, these forests were included in it and presently are under Umbarthan Range. These Reserved Forests are also under scientific management since 1905.

Shribhuwan forests were constituted as Reserved Forests and are under scientific management since 1905. During the time of Surgana Estate, these forests were part of Kalwan Range. However since 1953, these are under the administrative control of the Surgana Range.

Past history of these forests reveals that these forests were once Jagirs of Estate Rulers. Some of these forests were given as Inams also to the local population by the erstwhile British Government. Due to this peculiar ownership, the East Nashik Forest Division had to face a prolonged legal litigation with the erstwhile Inamdars.

SECTION 2 : PAST SYSTEMS OF MANAGEMENT & THEIR RESULTS

A. ABOVE GHAT FORESTS OF NASHIK :

7.2.1 Dodgson's Plan (1906-07 to 1935-36):- This plan covered teak bearing forest areas of 685.757 Sq. km. in Dindori, Nashik, Kalwan & Baglan Ranges. The object of the management was to improve the old and crooked crop. The silvicultural system adopted was Coppice With Standards. Annually an area approximately equal to a compartment was taken up for working in each block. Certain number of straight sound teak and injaili trees in each area were reserved as standards and the remaining crop was clear felled. Felling cycle of 30 years was prescribed. The Coppice With Reserve system proved unsatisfactory. The entire area was treated with only one silvicultural system irrespective of the requirement of the crop. The standards retained were of poor quality and over mature. As a result, the percentage of teak didn't improve in the worked area. The standards interfered with the growth of coppice shoots. No subsidiary operations such as singling of coppice shoots and climber cutting were prescribed, as a result of which coppice shoots could not develop properly.

7.2.2 Working Plan for Anjan and Scrub Jungles of Malegaon, Baglan, Kalwan and Chandwad Ranges by Shri. J. Dodgson : Before introducing this plan these forests were not subjected to any particular treatment. The crop of Anjan was well protected & hence fresh growth came up and the existing crop was fit for harvesting. Dodgson's Plan (1906-07 to 1935-36) was the first plan for the above tract with an objective to provide firewood, small timber and small building material to the local population. A felling cycle of 30 years was fixed for scrub forests and a rotation of 60 years was fixed for Anjan. The silvicultural system adopted was "Two Storied High Forest System" under which felling cycle for species having more value and longer life was decided as multiples of the felling cycle of inferior species having shorter life. The growing stock was a mixture of Anjan and scrub in varying proportions. The area was divided into 3 groups as below :

Group I	Area containing more than 33% Anjan.
Group II	Area containing less than 33% Anjan.
Group III	Area containing practically no Anjan.

In group I all old pollarded, dead and dying , trees over 139.7 cm girth and all thorny bushes were to be cut. Sound trees under 139.7 cm girth were retained. In group II, the reservation of Anjan and more valuable trees was fixed as 50 trees per hectare. It was proposed that $1/10^{th}$ of Anjan trees of girth 101.6 cm. and above, $3/10^{th}$ of Anjan trees of girth between 50 cm. and 101.6 cm. and $6/10^{th}$ trees of Anjan of girth under 60.90 cm. were reserved. All trees not reserved in group II were to be cut. In group III promising saplings and tree growth were reserved and the rest were proposed to be cut. Certain number of straight sound teak and injaili trees in each area were reserved as standards and the remaining crop was clear felled. No provision was made for replanting the area and as a result of which the crop of Anjan and scrub forest remained poor in density as majority of species being poor coppicer. Similarly non provision of subsidiary silvicultural operations resulted in improper development of coppice shoots.

Results : Certain number of straight, sound teak and injali trees were reserved as standards and the remaining crop was clear felled. No provision was made for replanting the area. As a result, crop of anjan and scrub forest remained poor in density as species like anjan are poor coppicer. Similarly no provision was made for subsidiary operations .It resulted into poor and improper development of coppice shoots.

WORKING PLAN OF NASHIK FOR ABOVE GHATS BY H.W. STARTE :

7.2.3 Starte's plan came into force from 1936-37. It covered 218520.7 ha. Reserved Forests of Above Ghats in Baglan, Kalwan, Nandgaon, Malegaon, Chandwad & Dindori Ranges of East Nashik Forest Division and Nashik Range of West Nashik Forest Division Following five working circles were constituted :

(i) Teak Working Circle
(ii) Scrub Working Circle
(iii) Sandal Wood Working Circle
(iv) Kuran Working Circle
(v) Miscellaneous Working Circle

(I) TEAK WORKING CIRCLE : This working circle comprised of mixed deciduous forests with dominating teak of quality III. The silvicultural system adopted was Clear Felling with policy of regenerating teak and injaili species vigorously. The object of the management was to produce teak trees of girth 76 cm in a rotation of 45 years. The felled but not burnt coupes were closed for grazing for a period of seven years. The burnt coupes were closed for a period of 10 years from the year of felling.

(II) SCRUB WORKING CIRCLE : This working circle comprised of mixed deciduous forests with Anjan, Sandalwood, and other injali as dominating species. The silvicultural system adopted was judicious combination of Clear Felling and Improvement Felling. A rotation of 45 years was fixed. No harvestable girth limits were fixed as primary objective was to protect and improve the existing growth. The felling series which contained good Anjan growth were closed to grazing for a period of 10 years from the year of felling. The annual coupes from remaining felling series were closed for a period of 5 years only from the year of felling.

(III) SANDAL WOOD WORKING CIRCLE : This was overlapping working circle and was divided in 4 felling series, each containing 5 annual coupes. Felling cycle of 5 years was fixed for harvesting of Sandal Wood trees. Only dead and dying trees of any age and size were to be felled. Dibbling of seeds on cleared patches of 2-3 feet in diameter was prescribed under cover of bushes of host species like Gultura, Shendri, Nirgudi, Tarwad, Khirmira, Neem etc. In order to have control over the operation, it was prescribed to work only in selected areas in each felling series and annual coupes. The dibbled patches were serially numbered and marked with pegs for convenience of checking the survival percent.

(IV) KURAN WORKING CIRCLE : This working circle included a number of kurans which were managed on grazing or cutting conditions. Closure to grazing in grazing kuran was prescribed from 1st April to 31st August and that in the cutting kurans from 1st June to 31st March. However, with the permission of the D.F.O., cutting kurans could be opened even prior to the 31st March for grazing. Kurans included in Teak and Scrub Working Circles were not separated but allowed to form integral part of Teak and Scrub Working Circles . These were subjected to silvicultural operations prescribed for these Working Circles whenever their turn for working occurred. During rest of the period, they were treated as kurans and sold annually in July.

(V) MISCELLANEOUS WORKING CIRCLE : This working circle comprised of 39841.337 ha. of special non- kuran grazing area which was set aside for simple grazing without being subjected to silvicultural treatment and 10639.632 ha. of unworkable area which could not be worked due to inaccessibility and precipitous slopes.

Results: The under stocked areas were included in teak and scrub working circles. These areas were to be regenerated after clear felling. But it could not be regenerated due to poor and degraded site conditions. In certain cases clear felling was done on the steep slopes also, but these areas could not be regenerated successfully. Artificial plantations could not be taken on entire area of clear felled. The silvicultural system adopted for teak plantations was also not very successful. As a result of it , the stocking in forest could not improve. Grazing without any regulation was permitted in both cutting and grazing kurans. The agro- forestry system prescribed for kurans was also not successful. The prescriptions in respect of artificial regeneration of sandalwood were also not carried out completely.

7.2.4 Working Plan for the Above Ghat Forests of East Nashik Division by J.H. Sankhe(1981-82 to 1995-96):

It covered an area of 79427.6 ha. of forests. The plan covered entire Above Ghat Forests except those under the catchment of the Girna River Valley Project for which preparation of a separate Watershed Management Plan was in progress. Forest area of this Plan was divided into Blocks and Compartments and were stock-mapped for the first time during the preparation of this plan. Forests under this plan were divided into 253 compartments (from 378 to 630). Following working circles were constituted under this plan.

i) PROTECTION WORKING CIRCLE : - This working circle included forests situated on upper hill slopes which are very steep and have vast stretches of exposed rocks with

little or no soil cover. These areas were not proposed to be harvested or worked under any regular silvicultural system . However, prescriptions for taking suitable measures for areas eroded or prone to erosion, gullies and small nallas were given. As the areas were susceptible to fires, the fire protection measures specified for Class I areas were prescribed.

ii) PLANTATION WORKING CIRCLE : The areas of Teak Working Circle of Starte's Working Plan were included in this working circle. Objective was to restock the under-stocked and blank areas which were suitable for raising better quality mixed forests. No felling of existing vegetation was proposed. Planting of teak and valuable suitable species was proposed in suitable areas. Teak was the main species but species like Khair, Shisam, Tendu, Moha etc. were also proposed to be raised in patches unsuitable for raising teak. Rotation was not fixed. However, sequence of plantation programme for 15 years was given. For raising teak**,** stump planting at 2m X 2m. spacing was prescribed. Weeding after three years and cleaning cum mechanical thinning in sixth year were prescribed. The expected spacing after first thinning was 2.8m x 2.8m. The next thinning was prescribed in 11^{th} year of the planting and this thinning was to be mechanical for uniform crop and silvicultural for non-uniform crop. The harvested coupes were to be fire protected and closed to grazing for a period of 7 years from the year of felling.

iii) AFFORESTATION WORKING CIRCLE: This working circle included some of the non kuran grazing areas from miscellaneous working circle of Starte's Plan. All such areas which were unfit for working on account of very sparse growth were included in this working circle. The total area under this working circle was 38013.6 ha. The area was divided into 24 afforestation series and each afforestation series was divided into 15 coupes. Afforestation period of 15 years was adopted. Species like Anjan, Siras, Sissoo, Karanj and Neem etc. were to be planted where soil depth was 20 cm. or more and grass and Agave were to be raised in rest of the areas. Seeds of Neem, Karanj etc. were to be sown in bushes. Agave suckers were to be planted over the mound of trenches. Gully plugging and cross bunds were to be done in the coupes. One cleaning operation was prescribed in third year to space out the seedlings. Fire protection and grazing closure were prescribed for a period of 10 years.

iv) PASTURE WORKING CIRCLE : Forests not capable of producing timber or firewood and having heavy grazing pressure were included in this working circle. Total area covered was 22116.9 ha. Grazing incidence was very high, fertile top layer of the soil was washed

away and erosion was rampant in these forests. The area was divided into three grazing series with an objective to improve the pasture land by imposing some control over heavy grazing and improving quality of fodder grasses. Three pasture schemes were proposed with rotational closure of pasture in each series. The grazing series was divided into 3 approximately equal sections designated as pastures. These pastures were kept closed in rotation. Closure from 15th June to 30th November with strict enforcement was prescribed. Enclosure by digging T.C.M was prescribed. Besides, closure to grazing and soil & moisture conservation measures such as gully plugging, nalla bunding etc. were prescribed. Sowing of grass seeds of improved varieties and exotic legumes and planting of fodder tree species etc. were also envisaged.

v) KURAN WORKING CIRCLE : This working circle included the areas of the former Teak Working Circle. The areas capable of producing grasses in both quality and quantity were separated from pasture areas and were constituted into kurans. Total area of this working circle was 7285.4 ha. Objective was to improve the quality of fodder grasses in the kurans by introducing better varieties of fodder grasses and to increase the yield. Cutting kurans were proposed to be divided into 10 sections. Annually an area not less than 4 ha. from one section was to be selected for introducing better grass species and entire bushy growth was to be uprooted. Unpalatable grasses were proposed to be cut and removed before their flowering. Three, two and one weedings were proposed during first, second and third years respectively. Soil and moisture conservation works such as gully plugging and nalla bunding were prescribed to be taken up throughout the kurans. Grazing was strictly prohibited in these kurans. The grazing kurans were closed from 1st April to 31st August and opened beyond this period. Class-I fire protection measures were prescribed .

Besides, following overlapping working circles were also formed :

i) Minor Forest Produce Overlapping Working Circle.
ii) Wildlife Overlapping Working Circle.
iii) Miscellaneous Overlapping Working Circle.

Results:

Afforestation activities on large scale were prescribed in Sankhe's Plan and accordingly plantations under various schemes were undertaken during that period . However, the model of afforestation suggested in the Working Plan was not followed in most of the plantation sites. Plantations were raised from different sources of funds such as District Plan, EGS,

D.P.A.P., M.A.P., Maharashtra Forestry Project, Western Ghats Development Programme etc. Therefore the sequence prescribed in the plan was also not followed.

Sankhe's Plan did not cover forest areas of Kalwan, Baglan and Chandwad Ranges. These areas were covered separately under Girna River Valley Project Plan. But this Plan could not be implemented. The forests of these talukas were managed without any Plan. These areas alongwith areas of Sankhe's Plan were afforested under different schemes as mentioned above.

Old plantations have partial success in general. Planting has been done on staggered contour trenches in the Drought Prone Areas. Both non-survival and congestion of plants were observed in such areas. The main reason of this is that seed sown at the time of planting resulted in a number of seedlings which could not be thinned out subsequently. Due to congestion competition among the surviving seedlings has increased. Besides, though the areas are reported to have Chandan plants in these plantations but the presence of it could not be observed. Sites well protected are showing good survival and growth. Soil depth is another natural factor responsible for success of plantation. Species tried in planting are Neem, Subabul, Anjan, Acacia-tortilis, Siras, Kashid, Eucalyptus, Prosopis, Chinch, Bor, Glyricidia, Khair, Bamboo, Karanj, Teak, Shivan, Acacia auriculiformis etc. It is observed that Acacia auriculiformis, Subabul, Glyricidia, Shivan etc are showing good results throughout the division. Teak is noticed in Kalwan and Dindori Ranges and has suffered from illicit felling. Sturdy, well grown teak trees are very rarely noticed in the plantation areas. Bamboo is showing good growth in Kalwan and Dindori Ranges. Anjan plantations are successful in Malegaon and Nandgaon Ranges. The natural regeneration in the plantations is absent perhaps due to heavy grazing and trampling by the cattle. The survival of fruit species is not satisfactory anywhere in the division. Acacia auriculiformis is doing very well in Dindori Range. The areas of Dindori and Kalwan Ranges have got rooted stock of forest species. The coppice shoots have come up well from these rooted stock wherever these have been effectively protected .

B. PAST SYSTEMS OF MANAGEMENT IN SURGANA FORESTS :

7.2.5 Prior to merger of Estate (1948-49), these forests were worked with an exclusive object to have maximum revenue. No working plan or scheme was in operation. The standing crop was sold taking entire village forest as an unit. The size and species to be removed were the sole choice of the purchaser / contractor and there was no consideration of silvicultural requirements of the crop in such decision. Both cultivation and tahal cuttings were allowed in dense forests which resulted the present honey combed pattern of

cultivation patches in the forest. After death of the Ruler in the year 1936, Estate was controlled by its Political Agent and since then treating the crop on silvicultural basis was started. Indiscriminate clearance of forest for cultivation and tahal cuttings were restricted. The sub D.F.O. Dangs Forest Division was sought on deputation for doing selection and demarcation of annual coupes, marking of trees and for having advice on technical matters related to forest management. These forests were then worked under silvicultural system of Improvement Felling. However, due to poor communication and undeveloped hilly terrain the silvicultural operations remained restricted to removal of only selection trees of girth 30 inches and above. The unsound and badly formed growing stock continued to constitute the future crop as their removal was not economical. Therefore, the forests were in great need of protection and removal of unsound and malformed growing stock and with this objective, the first Management Scheme (1942-43 to 1956-57) for these forests was prepared by Shri. D. R. Bharucha, Sub D.F.O. , Dangs in the year 1941 which was implemented from 1942-43. The main object of the scheme was to improve the growing stock within the shortest possible period and to ensure steady returns from them. Silvicultural system adopted was Improvement Felling. The entire crop was divided into 4 felling series and felling cycle of 40 years was fixed. Annual clear felling and planting teak in an area of 5 to 15 acres, five years closure, weeding in first three years and cleaning in 5^{th} & 11^{th} years were also prescribed.

7.2.6 As stated above Bharucha's scheme came into operation in the year 1942-43 and remained in force till 1956-57. The areas worked during these nine years was 10678.449 ha.

This scheme was revised in the year 1956 by S. A. Mundkur, Divisional Forest officer, Working Plans, Nashik. The felling series & blocks in the previous plan were retained and only one working circle i.e. "Surgana Forest Working Cirlce" was formed. The silvicultural system adopted was Selection-Cum-Improvement Felling. The object of management was to bring about improvement in value, quality and quantity of growing stock and to bring it to normal condition. A rotation of 80 years with felling cycle of 40 years was adopted. Selection girths prescribed were as follows :

Teak	-	46 " (116.8 cm)
Khair, Tiwas and Shisam	-	36 " (90 cm))
Bibla, Hed, Kalam and Ain	-	48" (121.92 cm)

Reservation of fruit trees like Mango, Charoli, Kawath, Moha, Shindi and trees of economic and medicinal importance such as Biba, Hirda, Tendu, Sawar, Ritha, Kamala or Shendri, Karanj, Bahawa, Bel, Arjun sadada was prescribed. 10 metres on either side of nalla and 3 mt. on either side of the roads crop was to be left untouched. Ten well grown sound teak trees of selection girth per acre, singling of teak coppice shoots, removal of injaili trees interfering with teak, climber cutting, stool dressing of illicitly cut stumps to obtain good coppice, regeneration by planting in an area upto 25% of the annual coupe were also prescribed. This scheme was replaced by Working Plan (1967-68 to 1982-83) of Surgana forests by Shri. A.R. Moon.

7.2.7 BARAGAON DANGS FORESTS : These forests originally constituted the Peint Reserves and were brought under scientific management from the year 1905, under the first Working Plan for Teak Reserves of Below Ghats by Shri. J. Dodgson. . Prior to this, there was no regular system of working. A few villages were selected and material was harvested by contract. The need of the time was to have a management plan with objects to bring the crop into a normal state and meet the demands of the local people at concessional rates. Keeping these in view Shri. J. Dodgson prepared the first Working Plan. The silvicultural system adopted was Light Selection Felling with the object to meet the needs of the local population. Rotation was fixed at 120 years with 30 years felling cycle. Harvestable diameter for Teak was fixed 16" (40 cm) at breast height. Entire area was proposed to be gone over within 30 years, harvesting one compartment in each block annually during the preliminary period of 30 years. Proportion of teak to injaili species was desired to be 2:1. No selection limit for removal of injaili species was prescribed and the same was left for the territorial D.F.O. In each compartment the trees to be cut during the preliminary period of 30 years were all unsound trees and all sound teak trees of diameter (at breast height) 16" (40.6 cm.) and above in addition to the injaili species which were considered fit for removal by the territorial D.F.O. The crop at the termination of this preliminary period of 30 years was expected to be fully stocked and normal. Regeneration was expected from natural origin, coppice shoots and raising plantations. Closure of 10 years was prescribed. No cleaning and thinning were considered necessary. This plan remained in force from the year 1905-06 to 1925-26. After ten years of introduction of this plan, these forests were transferred from Nashik Forest Division to Surat Forest Division and continued to be worked on the similar lines. In the year 1927 these forests were included in the Working Plan for Dangs Forest Division by Shri. Marjouri. By that time 20 coupes of the previous plan were already worked and therefore, the prescriptions for the remaining 10 coupes of the previous plan were kept the same. Thus the revised plan prescribed for going over the remaining 10

compartments, within a period of 10 years to complete the Dodgson's preliminary period. Improvement and regeneration fellings were prescribed. Clear felling for raising plantations in areas containing only unsound stock was prescribed. Pole crop was allowed to be retained to constitute the future crop. The system of management adopted was Selection Cum Improvement Felling.

7.2.8 SHRIBHUWAN AND SURROUNDING FORESTS : These forests were worked under Dodgson's Plan (1906-07 to 1936-37) . The silvicultural system adopted was Coppice With Standards with a felling cycle of 30 years. This plan was subsequently revised by Shri. H.W. Starte and was introduced in the year 1936-37. Coppice With Standards system of the old plan was replaced by Clear Felling system with vigorous artificial regeneration of both Teak and Injaili species. Provisional rotation of 45 years was fixed. This plan continued till 1949-50. In coupes where the stocking was poor, retention of 10 sound trees of girth 45.7 cm. of any good species was prescribed. The decision in respect of the extent of area for clear felling in any coupes was to be taken by the D.F.O. by taking into consideration the fitness of area for regeneration by natural and artificial means. Closure for 10 years from the year of felling was prescribed. The areas regenerated under this plan were not expected to be thinned during the operation of this Plan. However, one thinning in 20th year of plantation was prescribed. In areas worked during Dodgson's Plan, thinning at varying intervals were prescribed in order to thin them out completely during this plan period (1936-37 to 1949-50). Light thinning with sparse removal of over-mature standards was prescribed.

7.2.9 The Below Ghat Forest areas of East Nashik Forest Division viz. Ex-Surgana Estate forests, Baragaon Dangs forests and Shribhuwan forests are identical in site quality and have similar climatic and biotic factors. So pending completion of forest settlement of Ex-Surgana Estate forest areas, these areas were being worked under three different working plans or schemes due to their legal status. After constituting Ex-Surgana Estate forests areas into Reserved Forests in the year 1963, it was felt desirable to bring all these Below Ghat areas under the purview of a single working plan and subsequently these areas were put under a single Working Plan (1967-68 to 1982-83) for Surgana Forests by Shri. A.R. Moon. All the forest areas of Surgana were systematically stock-mapped for the first time during the preparation of this working plan. Following working circles were constituted :

i) Protection Working Circle
ii) Conversion Working Circle
iii) Miscellaneous Working Circle
iv) Miscellaneous Plantation Working Circle
v) Khair Overlapping Working Circle
vi) Bamboo Overlapping Working Circle
vii) Protected Forest Working Circle

7.2.10 PROTECTION WORKING CIRCLE : Mostly bare precipitous slopes and inaccessible forests were allotted to this working circle. Objectives of management were to retain the existing soil cover and to check soil erosion. Proposed treatments were to refrain from any working even taking plantation, providing complete protection and no felling. However, extraction of dead trees, if economically feasible, was prescribed. Appropriate soil and moisture conservation measures were prescribed for checking formation of gully and nalla. All the areas, though scattered throughout the taluka, were grouped in one felling series viz. Protection Felling Series. Closure to grazing was permanently prescribed . However, grass cutting at the discretion of the DFO was allowed.

7.2.11 CONVERSION WORKING CIRCLE : Entire Baragaon Dangs forests, except small area under protection working circle; most of the Surgana forests which were comparatively compact and entire Shribhuwan forests were included in this working circle. Thus all the harvestable teak forests were under this working circle. These areas were capable of producing large sized timber of teak and superior injaili species. To manage the forests as high forests for production of large sized timber, the objects of management were as follows :

1) To secure sustained yield.
2) To improve the value, composition and quantity of the growing stock.
3) To meet people's demand for forest produce without impairing productivity.

Conversion to uniform by clear felling with artificial regeneration was the silvicultural system adopted to achieve the normalcy in the forest. Four periodic blocks were formed. Periodic block I & II were distinguished and definite areas were allotted to them and rest of the areas were allotted to PB-III and IV. PBI was proposed to be regenerated by clear felling and planting. In PB-II, cultural operations mainly climber

cuttings were prescribed. In unallotted periodic blocks (III&IV), tending operations and limited selection felling were prescribed.

Areas planted in the past were scattered all over in small patches of 0.8 to 10 ha. These were listed and necessary thinning was prescribed irrespective of their occurrence in the periodic block. PB-I was intended to be regenerated in 20 years. In PB-I, all the advance growth of teak and other superior injaili species of girth upto 60 cm., if found in patches of not less than 0.5 ha., was to be retained to form the future crop. In these patches retaining well grown poles was prescribed. Old plantations falling in this PB were excluded from clear felling and subjected to tending operations. They were expected to form a part of future crop. Protection areas unfit for planting were excluded from clear felling.

In PB-II, no felling except of dead trees, climber cutting and tending the existing regeneration were prescribed. These areas were not different from PB-I area, but due to non availability of planting stock and inadequacy of trained staff these areas were put under PB-II. In PB unallotted (III and IV), better stocking areas with healthy and well grown poles and middle aged trees were allotted. Only suitable tending operations were prescribed and removal of over-mature trees was permitted. Thus the treatment proposed was Selection Cum Improvement Felling. Selection girth for both teak and injaili was fixed 54". Only 60% trees of selection girth were to be removed. Khair trees of all sizes were to be retained. Execution of all operations in this PB was aimed at securing a judicious mixture of teak with superior miscellaneous species. Old plantations of previous 30 years were listed and their ages were ascertained by approximation and appropriate thinning was prescribed. Thinning in teak with the help of yield table was suggested. Teak, Haldu and Khair were proposed to be raised in plantations. Rotation of 80 years was adopted. The yield was prescribed to be controlled by area. No yield was anticipated from PB-II. PB unallotted areas were expected to yield considerable quantity of timber from selection felling and thinning. Based on enumeration and stem analysis, it was concluded that girth class (121 - 135) cm. would be available as selection trees in a period of 20 years. To safeguard the future yields, only $2/3^{rd}$ of total available trees were proposed to be harvested and $1/3^{rd}$ were reserved as future safeguard The felling was to be done departmentally or through FLCS. After felling and removal of material, the rab preparation by spreading the fallen debris and burning were prescribed. After that, planting teak in suitable area and miscellaneous species like khair, hed and ain in other areas not suitable for teak was prescribed.

7.2.12 MISCELLANEOUS WORKING CIRCLE : This working circle included the Reserved Forests on the fringes of cultivation. Forest area covered was 1221 ha.. Mostly the growing stock was malformed and badly grown because of illicit lopping. Incidence of grazing was very heavy. Special object of management was to create buffer zone between the better quality forest and human settlements and to conserve existing tree growth. No regular working was prescribed and complete rest for recoupement was intended.

7.2.13 MISCELLANEOUS PLANTATION WORKING CIRCLE : This working circle extended to over 1182.8 ha. It included all the reserved forests not included in any other working circles. All these areas were mostly depleted and devoid of growing stock. Heavy grazing and lopping were prevalent. The site quality was good and improvement of growing stock was feasible. Objects of the management, therefore, were to restock these depleted areas and to promote soil and moisture conservation. No felling of any sort, except for removal of dead trees was prescribed and planting with suitable species like Teak, Khair and Eucalyptus hybrid was prescribed. Whole area was formed as one plantation felling series. Plantation was to be done in pits of size (1' X 1' X 1') at 6' X 6' spacing or in trenches of size (12' X 2' X 1') at 100 ft. interval, depending upon the soil depth and slope. Planted areas were to be closed to grazing for 7 years.

7.2.14 KHAIR OVERLAPPING WORKING CIRCLE : This working circle extended to entire area of the plan except PBI of Conservation Working Circle and Protection Working Circle. Total area was 15742.9 ha. Khair constituted about 2.63% and 1.31% of growing stock in Baragaon Dangs and Surgana forests respectively. Special objects of the management were to harvest the marketable Khair trees systematically for Katha industry, to increase the percentage of Khair in these forests and to produce progressively increasing yield in perpetuity. To remove the mature and over-mature trees was necessary to avoid their deterioration and to replace them with new crop. Since the removal of these trees was spread over vast areas, the selection silvicultural system was adopted. Adequate measures were prescribed to assist its regeneration. Raising khair plantations in patches of teak areas which were unsuitable for raising teak plantation was recommended. Harvestable girth was fixed at 100 cm. at breast height which was expected to be achieved in 80 years. With a view to go over the entire area within a reasonable sort period, felling cycle of 20 years was prescribed. Entire area was subdivided into three felling series - North Surgana, West Surgana and Surgana. According to the selection girth, about 580 trees were made available for harvesting annually. No special subsidiary

cultural operation was prescribed after felling as it was uneconomical. Artificial regeneration of Khair was prescribed under other working circles.

7.2.15 BAMBOO OVERLAPPING WORKING CIRCLE : It was extended to an area of 21035.28 ha. At the time of stock mapping, the bamboo was in seedling stage due to gregarious flowering in the year 1959. Their clump formation was not fully established at that time. Objectives of management were mainly to improve the incidence and yield of bamboo in the forest and to meet the local and Industrial demand . Felling series were not formed as the normal clump formation was not set in and the crop was immature. To enhance clump formation, some treatments were prescribed. Selecting around 200 clumps per hectare, retaining promising culms, cutting miscellaneous growth and climbers around these clumps up to a distance of 1.5 mt., removal of badly grown & twisted culms from these clumps etc. were prescribed. Cutting cycle of 3 years was prescribed. A clump containing more than 8 mature culms was considered mature for harvesting.

7.2.16 PROTECTED FOREST WORKING CIRCLE : This working circle comprised of all areas legally classed as Protected Forest to the extent of 1200 ha.. These forests were to be managed for meeting local demand in respect of small sized timber, firewood etc., to increase proportion of Tahal yielding species and to regulate Tahal cuttings. Selection felling was prescribed. No plantation activities were prescribed. Rotation of teak and other species was fixed at 50 years. Harvestable girths for teak and other superior injaili species were fixed as 36" and 30" respectively. Yield was regulated by area.

In addition to various working plans mentioned above, a Watershed Management Plan for the catchment of Girna River Valley Project in Kalwan, Baglan and part area of Malegaon, Nandgaon, Chandwad, Yeola and Surgana talukas was prepared by Shri. S.K. Dalvi, DFO, Soil Conservation Division, Dhule. Forest area dealt with under this plan constituted 937 Sq. km. and was divided into 377 compartments. Following working circles were formed :

i) Protection Working Circle.
ii) Selection Cum Improvement Working Circle.
iii) Afforestation Working Circle
iv) Pasture Working Circle

However, this management plan could not be implemented.

7.2.17 RESULTS OF PAST WORKING :

1. Since the introduction of scientific management, Above Ghat Forests were mainly worked under Coppice With Reserve system. In Starte's Plan, clear felling with vigorous regeneration of Teak and injaili was adopted. Besides, even under-stocked areas were included under this system which were not suitable for Clear Felling system. Therefore, the regeneration could not come up as expected and consequently this system degraded the site condition.

2. Closure to grazing prescribed for a period ranging from 7 to 10 years from the year of felling could not be implemented due to heavy grazing pressure.

3. In scrub forests of the division, a judicious combination of clear felling and Improvement felling were prescribed. The closure could not be effected in such areas. This affected adversely the regeneration , besides, artificial regeneration could not be undertaken.

4. The qualitative improvement in proportion of good quality grasses in Kurans by natural regeneration was prescribed. However, protection from grazing till establishment was not prescribed which led to further deterioration.

5. In Surgana forests, the objects of management could not be achieved due to depleted stock condition and continued practice of tahal cutting. The stock had great proportion of unsound and malformed trees. Due to various reasons such as interference by encroachers, inadequacy of staff, frequent fires, the regeneration could not come up. Plantations to a small extent were raised. Baragaon Dangs forests were under scientific management since long time and so their condition though improved yet it is far away from normal.

6. Generally, results of plantations are not encouraging. Due to non availability of authentic records, analysis of all the plantations could not be possible.

SECTION 3 : ACTIVITIES UNDER THE IDFR SCHEME

7.3.1 In 1980, the Forest Department took up the programme for improvement in grass lands by establishing a separate Division of Intensive Development of Fodder Resources (IDFR) with the following objectives :

(i) To evolve superior land use for productive areas.

(ii) To provide the local population with a permanent and remunerative occupation of cattle breeding and dairy and thereby check their seasonal migration in search of work.

(iii) To make available fodder of superior quality.

(iv) To improve the soil water regime in the area .

7.3.2 Under this Scheme, the IDFR Division took up the work for improving the kurans in four Talukas of Nashik namely Nashik, Sinnar, Igatpuri and Dindori. Out of these four talukas only Dindori comes within the tract dealt with. For the purpose of development, these areas were to be transferred from the territorial division to the IDFR for a period of 4 years and thereafter the improved kurans were to be transferred back to the respective division for management. Each year about 600 ha. of kuran was to be taken up for development by the IDFR. The division was closed in the year 1994 and the areas were handed over to respective divisions.

7.3.3 The technique adopted by the IDFR was as follows:

In the pre-planting year, the selected area was surveyed and demarcated. TCM was dug along periphery. With the onset of rains, the thorny plants such as Agave and Prosopis were planted on the mound. Then the area was surveyed with respect to soil depth and different zones were delineated. Zone I corresponded to soil depth upto10 cm., Zone II represented soil depth of 10 to 30 cm. and Zone III had soil depth more than 30 cm. Based on soil depth the treatment map was prepared. Unwanted bushes were uprooted and sites of check dams were located. These were made with locally available material. During the pre-monsoon period, soil working activities were undertaken. In Zone I areas, V shaped furrow (depth 15-20 cm and 2 m. long) along contours 6 to 8 m. apart were dug. In zone II, Grass seed beds (6 mt. X 1.2 mt. X 15 cm) were prepared. Initially 37 beds/ha were taken but since 1992-93, 100 grass beds and 50 trenches each with 3 fodder trees per ha. were proposed. Check dams and gully plugs were constructed. In Zone III “Grass seed pots” were prepared by ploughing. In the first week

of June, seeds of Sehima nervosum and Dichanthium annulatum were sown on the grass beds. V shaped furrows were discontinued after 1992-93. Seedlings of fodder tree species like Subabul, Sissoo, Anjan, Siras, Shivan etc. were planted on the trenches. Area was protected from fire and grazing . In the Second year, with the onset of monsoon, rooted slips of grass species were planted in blank patches. Two weedings and hoeing were done around tree species in the 1st and 2nd years. Grass seed beds were weeded once. In the 3rd year, one weeding & hoeing around tree seedlings was carried out and fire tracing was done. Watchman and fire protection works were continued up to 5th year.

7.3.4 Results: Lot of shrubs invaded the areas once they were given the protection for five years. It reduced the yield of grasses. Local communities were not involved. As a result ,they did not cooperate once the kurans were opened. These kurans were mostly disposed off through auctions. Therefore local people did not see any benefit from it. It was observed that after five years, there was no activity of reseeding, protection and pruning etc. in these kurans and every year grass was harvested from these kurans. Therefore, there was gradual decreasing trend in sale price over the years as the quality and quantity of the crop got deteriorated for want of fresh periodic inputs. The growth of grass was limited to the grass seed beds and plots where the seeding was done. It did not spread all around as was expected. Regular loosening of soil was necessary in such a way that areas of grass beds acting as nuclei, could go on increasing regularly. Most of kurans have undulating topography and poor soil depth. Soil and moisture conservation measures assume great importance in such areas in order to increase their productivity. Therefore, greater emphasis should should have been given to soil & moisture conservation works.

7.3.5 Working Plan of B.P.Singh, D.Y.Deshmukh And A.K.Mishra (2002-03 to2011-12):

It was the first consolidated working plan for East Nashik Forest Division. The plan prescribed treatment for 182666.482 ha. of forest area. Out of which the following areas have been given treatment under various working circles up to 2010-11.

Sr.No.	Working Circle	Total Area of working circle	Plantations taken up in ha.	SMC works taken up in ha.	Tending operations in ha.
1	Protection WC	14198.862	0	126.099	0
2	Afforestation WC	64414.608	1533.520	5990.139	445.000
3	Improvement WC	32207.494	194.143	1367.967	628.000
4	Fodder Management WC	4639.440	1578.786	1624..062	0
5	JFM WC	-	2931.00	0	0
Total		**115460.400**	**6257.449**	**9108.267**	**1073.000**

In total, seven working circles were constituted for the sake of management. The detail of these working circles is given below.

(1) Protection working circle: This working circle included all the forest areas having steep and precipitous slopes. The total forest area assigned to this working circle was14198.862 ha. Out of this area, SMC works have been taken up in126.099 ha. up to 2010-11. The object of management of this working circle was to prevent soil erosion, improve sub soil water regime and to improve forest cover by gap planting. No harvesting was prescribed in this area .Only soil and moisture conservation works along with seed sowing in accessible areas were prescribed. Grazing was totally prohibited and fire protection measures were prescribed**.**

Results: All the areas allotted to this working circle could not be treated due to lack of funds. The results of the treatment done are satisfactory.

(2) Improvement working circle: The total area allotted to this working circle was 32207.494 ha. The main object of management of this working circle was to protect and improve the growing stock in this area. Tending of the rooted stock to obtain coppice regeneration and gap planting were prescribed. Removal of dead dying trees, live high stumps, climber cutting, stump dressing and singling operations were prescribed to promote the coppice shoots. Old plantations were to be thinned**.**

Results : In this working circle, plantations have been taken over 194.143 ha of area. Similarly, SMC and tending operations were taken on 1367.967 and 628.000 ha respectively. All the areas assigned to this working circle could not be attended due to shortage of funds. The blank areas of this working have been planted and results are presently satisfactory. The summary of survival percentage of these sites is given below. The soil and moisture conservation works carried out in this area have achieved their purpose. However, the tending operations carried out in this area need to be improved. The rooted stock should be given the treatment of cut back, coppicing, singling as per requirement of the crop.

Summary of sites as per survival percentage

Sr.No.	Year	Total sites	No. of sites as per survival percentage			
			<40%	40-60%	60-80%	>80%
1	2006	3	0	1	2	0
2	2007	0	0	0	0	0
3	2008	3	1	1	1	0
4	2009	7	0	3	4	0
5	2010	3	0	0	3	0
6	2011	1	0	0	1	0
7	2012	1	0	0	0	1
Total		18	1	5	11	1

(3) Afforestation Working Circle:

This working circle includes all those forest areas which have blanks areas, or very sparse vegetation. Most of these areas are degraded . The total area included in this working circle was 64414.608 ha. The main object of this working circle was to improve the stocking of the forest area, conservation of soil and moisture and to increase the productivity of the forest. The most important component of the circle was that four years were assigned for preparation of the plantation sites. In first year, only the treatment map for soil and moisture conservation works was to be prepared. In second year, soil and moisture conservation works were to be carried out. In third year, the treatment map for planting works was to be prepared. In fourth year, pre-planting operations were to be carried out. The actual plantation activity was to be carried out in the fifth year. Although the area was divided into 20 coupes, only area of first 6 coupes was to be planted during the plan period. The local , hardy and drought resistant species were recommended for plantations.

Results : In this working circle, the SMC works have been taken up on 5990.139 ha area up to 2010-11. The area of five coupes have been covered. The actual area planted in these five coupes is 1533.520 ha. The tending operations have been carried out on 445.00 ha area. Very less area of this working circle has been treated due to shortage of funds. The result of the plantations are moderately satisfactory. The failure of artificial regeneration is due to i) shortage & irregular of rain ii) illegal grazing & fire iii) plantations of local species was not done. The summary of survival percentage of these sites is given below. However , the soil and moisture conservation works have achieved their intended objective, such as i) increase forest cover & grass lands, water table of the land and due to JFM activities increase the protection of the forest area and employment at local level . The process of preparation of treatment map needs to be improved. Various categories of areas should be delineated properly on the map and in the field.

Summary of sites as per survival percentage

Sr. No.	Year	Total sites	No. of sites as per survival percentage			
			<40%	40-60%	60-80%	>80%
1	2006	26	4	16	6	0
2	2007	27	2	7	15	3
3	2008	2	0	2	0	0
4	2009	0	0	0	0	0
5	2010	1	0	0	1	0
6	2011	5	0	0	5	0
Total		61	6	25	27	3

(4) Kuran Working Circle :

This working circle included the kuran areas of ex- IDFR division and other kuran areas of Dindori and Nandgaon talukas. The tree growth in these areas is sparse. The areas are open and under stocked. But these areas were considered capable of producing good quality grasses under intensive management. The area allotted to this working circle was 4639.440 ha. The object of management of this working was to improve the quality of fodder in the kuran areas by introducing grasses of superior variety and to improve their production in order to meet the local demands. Out of the total coupe area, only 5 % areas was to be treated intensively. The intensive working included soil working, removal of entire bush growth and unpalatable grasses by uprooting them. Seed sowing of superior variety grasses, weeding and application of organic fertilizers was recommended. Sheda, Marvel, Pawanya grasses were proposed for seed sowing. Grazing was strictly prohibited in these kurans. Grasses were to be disposed of exclusively on cut and carry basis.

Results : The results of this working circle are not very encouraging. It was prescribed that 5 percent of area allotted this working circle would be intensively worked and the superior quality grasses introduced in 5 percent area would spread to the remaining area of this working circle. In this working circle 1578.786 ha area has been tackled. This purpose could not be achieved . The condition of kuran areas have not improved significantly. On the contrary, large areas of this working circle have gone under encroachments.

(5) Non Timber Forest Produce(Over Lapping)Working Circle :

This working circle covered the entire area of the working plan . The special object of management of this working circle was proper collection of NTFP as well as to increase and maintain their sustained yield. The areas of trees like Sitaphal, Neem etc were to be identified, demarcated and given special protection with application of fertilizer. Similarly, it was recommended to include trees like Moha, Hirda, Beheda, Karanj and Khus in the plantation schemes to increase their proportion.

Results : This working circle has also achieved its purpose to the limited extent only. The collection of NTFPs and their yield has not seen any improvement.

(6) Bamboo(Over Lapping) Working Circle :

This was a working circle over lapping the improvement working circle. The area included in this working circle was 32207.494 ha. Two types of bamboo species i.e. Manvel and Kashti are found in this area. The object of management of this working circle was to improve the stocking of bamboo in the forest, to increase the yield of bamboo from forest and to meet the local demand of bamboo. The harvesting of the bamboo was to be done on a cutting cycle of three years. In the gregariously flowered areas of Surgana, it was recommended to select 200-

250 foci of bamboo per ha to strengthen the natural regeneration. In this area, all the other growth of climbers and other inferior species interfering with bamboo were to be removed. These silvicultural operations were recommended for proper establishment of the naturally regenerating bamboo.

Results : Practically no bamboo has been collected from this area. The Kashti bamboo has flowered gregariously during the operation of current working plan. The dead bamboo was not removed immediately from entire area. It was removed only from 65 ha area in the year 2008-09 from Kalwan range. Its natural regeneration has come up very well. But it has not been attended properly.

(7) Wildlife(Over Lapping) Working Circle :

This was an over lapping working circle and covered the entire area of the plan. The special object of the management of this working circle was to protect and conserve the wildlife by providing suitable habitat. Creation of new water holes and periodic cleaning of existing water holes was recommended in order to augment the supply of water. Similarly planting of fruit tree species was to be carried out at suitable places. Strict fire protection and implementation of wild life act was prescribed.

Results : In this working circle, fruit species have been introduced in the plantation area. Some soil and moisture conservation works have slightly improved the availability of water.

SECTION 4: SPECIAL WORKS OF IMPROVEMENT TAKEN:

7.4.1 In the current working plan, several works of improvement such as plantations, soil and conservation, tending operations etc. have been taken up. The detail of these major works is given below

Improvement Works

Plantations (ha)	SMC Works (ha)	Tending Operations(ha)
6309.756	9108.267	1073.000

SECTION 5 : PAST YIELD

7.5.1 The yield of timber and firewood for the period from 2002-03 to 2010-11 is given below.

Sr. No.	Year	Timber(Cum)	Firewood(Cum)
1	2002-03	190.518	83.385
2	2003-04	159.525	55.684
3	2004-05	81.875	49.000
4	2005-06	136.686	3.000
5	2006-07	169.411	445.425

6	2007-08	72.385	62.908
7	2008-09	106.150	166.229
8	2009-10	104.864	272.302
9	2010-11	101.463	190.066

SECTION 6 : PAST REVENUE AND EXPENDITURE

7.6.1 Total revenue and expenditure for the period from 2002-03 to 2009-10 is given below.

Revenue and expenditure

Sr.No.	Year	Revenue (lakhs)	Expenditure(lakhs)			Total Exp.
			Salary	T.A.	Other	
1	2002-03	54.28	351.76	5.24	252.07	609.07
2	2003-04	40.32	383.04	3.50	235.43	621.97
3	2004-05	51.19	406.99	5.21	135.73	547.93
4	2005-06	23.50	471.50	6.41	195.77	673.68
5	2006-07	34.88	547.46	1.07	274.15	857.58
6	2007-08	25.33	560.41	5.72	367.97	934.10
7	2008-09	35.02	688.31	8.51	631.40	1328.22
8	2009-10	51.68	628.59	5.33	760.96	1394.88

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CHAPTER - VIII

STATISTICS OF GROWTH AND YIELD

SECTION 1 :STATISTICS OF GROWTH

8.1.1 The growth data of some trees was studied for Surgana and Baragaon forest during preparation of Moon's plan. In total 60 trees well distributed all over the area were selected for stem analysis. The selected trees for stem analysis were mostly in the girth class 120-135 cms and above. The results of the stem analysis are given below.

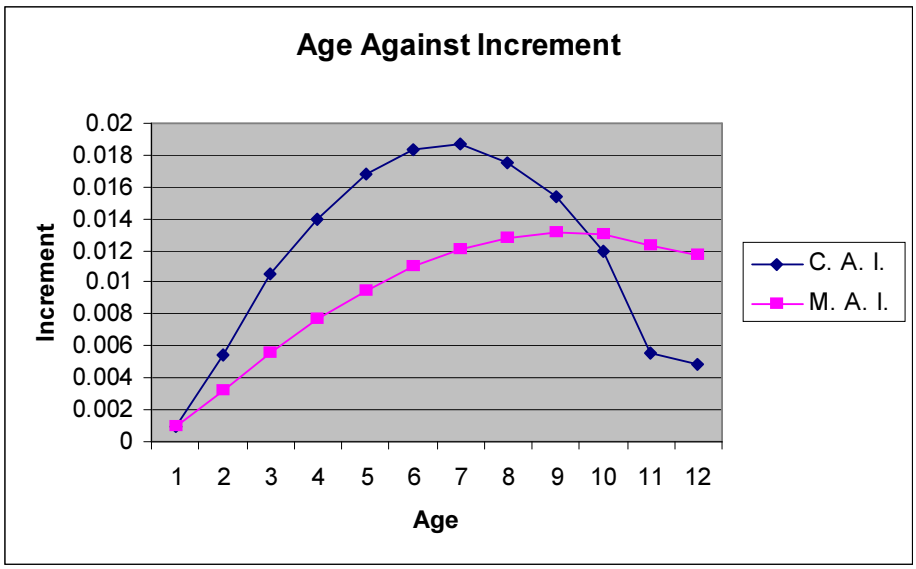
Table

(site quality III)

Age (yrs)	Height (mt.)	Diameter (B. H.) O.B. (cm.)	Standard stem timber volume(m3)	C. A. I. (cm.)	M. A. I. (cm.)
10	4.268	6.35	0.00924	0.00092	0.00092
20	10.058	13.443	0.06319	0.0054	0.00316
30	13.716	19.812	0.168	0.01048	0.0056
40	16.611	24.892	0.308	0.014	0.0077
50	19.507	28.21	0.476	0.0168	0.00952
60	20.727	33.274	0.66	0.0184	0.011
70	22.86	36.703	0.847	0.0187	0.0121
80	23.774	29.624	1.022	0.0175	0.0128
90	25.146	41.83	1.176	0.0154	0.0131
100	25.775	43.942	1.295	0.0119	0.013
110	26.518	45.466	1.351	0.0056	0.0123
120	26.823	46.736	1.40	0.0049	0.0117

On the basis of CAI & MAI data given in the above table CAI / MAI curve has been plotted as follows.

(site quality III)



(Scale - 1 = 10 Years.)

Site is well suited for production of high class timber and forest is capable of being managed under selection system.

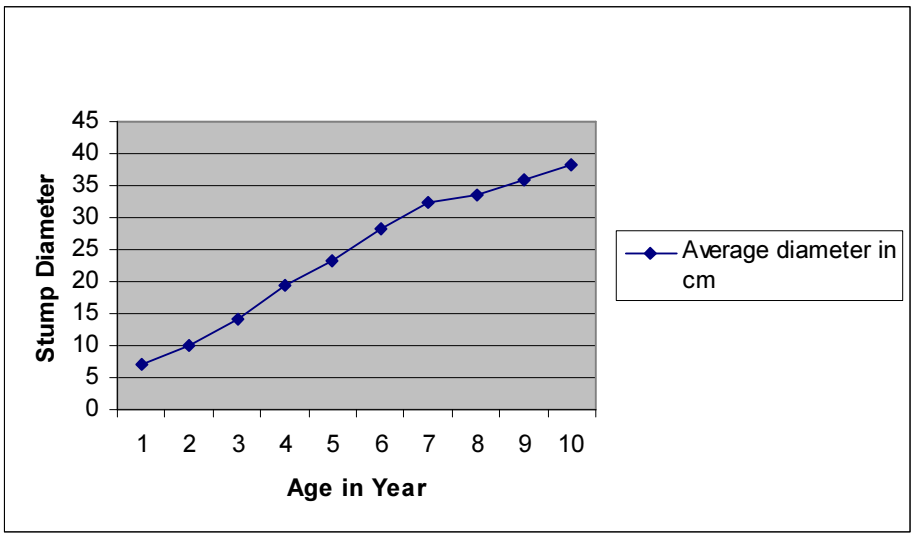
From the above curve it appears that the rotation for the maximum volume production will be available at 100 years. Therefore, the rotation will be kept at 100 years. The growth data in respect of Nashik reserved forests below Ghats in Umberthan Range was studied at the time of preparation of this plan and carried out stump analysis of teak trees and obtained certain data from stump analysis given as below.

Table

(Site Quality = III / Ivb)

Age in Years	Average diameter in cm (Under bark)
10	7.05
20	9.968
30	13.99
40	19.48
50	23.33
60	28.25
70	32.5
80	33.55
90	35.85
100	38.25

On the basis of above data a curve between age and diameter has been plotted which is given below.



(Scale - 1 = 10 Years)

From the above curve it is seen that even after 90 years of age there is continuous increment in the diameter of teak tree. However, it is not possible to find out the age on which diameter increment virtually culminates as stumps of teak trees above 100 years of age were not available for stump analysis.

The general volume table of Important timber species is given as under.

Table

Name of Species	Girth Class in Cm.							
	15–30	30-45	45-60	60–75	75–90	90– 105	105–120	120 & above
Tectona grandis	0.013	0.054	0.148	0.287	0.467	0.693	0.977	1.268
Ougenia oojeinensis	0.013	0.048	0.116	0.238	0.398	0.594	0.827	1.066
Anogeissus latifolia	0.015	0.081	0.197	0.372	0.599	0.887	1.238	1.574
Lagerstroemia parviflora	0.014	0.053	0.153	0.352	0.497	0.733	1.009	1.343
Boswelliaserrata	0.001	0.037	0.102	0.202	0.364	0.549	0.785	1.122
Madhuca indica	0.015	0.048	0.112	0.217	0.393	0.654	0.993	1.418
Adinacordifolia	0.007	0.048	0.118	0.239	0.422	0.670	0.983	1.348
Mitragyana parvifolia	0.010	0.043	0.103	0.213	0.376	0.590	0.885	1.209
Brewia tiliaefolia	0.013	0.053	0.128	0.249	0.427	0.649	0.916	1.240
Rest of Species	0.009	0.046	0.112	0.247	0.416	0.626	0.856	1.113

The rate of growth for the important miscellaneous species of coppice origin is given in Appendix No. II, XV, 17.

SECTION 2: ENUMERATION

8.2.1 The enumeration of trees in the forest area of East Nashik division has been carried out by 'Survey of Forest Resources' unit Nasik in the year 2009-10. Plots of 30x30 meters were laid at an interval of 600 meters. All the trees above 15 cms girth were counted in these plots. The data has been analyzed by Chief Statistician, Nagpur and the important observations are presented below. The detailed results of enumeration are given in **appendix I, VIII : 1.**

8.2.2. The number of trees found in the growing stock have been calculated in each working circle. The weighted average of the number of trees in the growing stock comes to 77.32 trees per hectare.

Past Enumeration			Current Enumeration		
Sr. No.	Working Circle	No. of Trees Per Hectare	Sr.No.	Working Circle	No. of Trees per Hectare
1	Protection W.C.	55.441	1	Protection W.C.	98.078
2	Conversion W.C. PB-1	502.72			
3	Conversion W.C.PB-II	245.63			
4	Conversion W.C.PB-III	233.08			
5	Improvement W.C.	37.012	2	Improvement W.C. *	164.834
6	Afforestation W.C.	17.640	3	Afforestation W.C.	33.078
7	Fodder Management W.C.	29.600	4	Fodder Management W.C.	19.551
			5	Area recently handed over by FDCM to Territorial Division.**	14.816
			Weighted Average 77.32 Trees /ha		

* Areas of PB I, PB II, PB III and Improvement Working Circle of past enumeration work have been considered to be in Improvement Working Circle for the current enumeration work.

** Seven compartments of Dindori range which were with FDCM earlier, have been transferred back to East Nashik Forest Division in the recent past.

The previous enumeration in this area was carried out combined for East Nashik and Malegaon subdivision. It was conducted in two different phases. The enumeration for forest area of Conversion Working Circle in Surgana taluka was done in the period of October 1991 to March 1992.In the remaining area of East Nashik and Malegaon, the enumeration was carried out during November 1995 to December 1996. As the area of enumeration has

changed and new subdivision has been carved out, it is difficult to compare the results of two enumerations.

8.2.3 It is worth to note that in the current enumeration that 68.35 percent trees in the growing stock are below 45cms girth and only 31.65 percent trees are in the higher girth classes. It shows that the most of the crop is young .

Table

Percentage of trees in various girth classes

Sr. No.	Working circle	15-30cms	30-45cms	Remaining Girth Classes	Total Estimated no. of trees.
1	Protection W.C.	41.504	34.192	24.304	100
2	Improvement W.C.	24.839	19.719	55.442	100
3	Afforestation W.C.	47.594	28.971	23.435	100
4	Fodder Management W.C.	72.099	21.579	6.322	100
5	Area recently handed over by FDCM to Territorial Division.	81.243	16.671	2.086	100
Weighted Average		**41.775**	**26.578**	**31.646**	**100**

The classification of the trees have also been done in various categories such as general utility, special utility and minor forest produce. The analysis of results shows that in the total growing stock, 55.90 percent trees are in the general utility class. The special utility and minor forest produce categories comprise of 8.97 and 9.85 percent respectively. The utility class mainly comprises of teak, ain, tiwas, bija etc. The special utility class includes trees such as Dhawada, kuda, khair, shiwan, sawar, kalamb, salai, hed etc. The species of the minor forest produce are tendu, apta, awla, behda, hirda, moha , palas , bor etc. The number of trees as per current enumeration falling in to various categories are as given below.

Table

Trees in various Categories

Sr. No.	Category	Total trees/ha	General Utility Sp.	Special Utility Sp.	Minor Forest Produce Sp	Other Sp.
1	Weighted Average	77.32	43.220	6.938	7.619	19.543
2	Percentage of total stock	100	55.90	8.97	9.85	25.28

The analysis of teak in the growing stock has also been done. It is observed that teak comprises 34.07 percent of the total growing stock. The detail of teak trees in various working circles is given below.

Teak in growing stock

Sr. No.	Working Circle	Trees /ha	Teak trees/ha	Percentage of teak
1	Protection W.C.	98.078	76.060	77.551
2	Improvement W.C.	164.834	49.760	30.190
3	Afforestation W.C.	33.078	5.394	16.310
4	Fodder Management W.C.	19.551	1.749	8.946
5	Area recently handed over by FDCM to Territorial Division	14.816	4.321	29.160
Weighted Average		**77.320**	**26.340**	**34.070**

As the previous enumeration were carried out in two different periods over separate areas and also the area considered for previous enumeration has been changed due to re organization of then East Nashik division (due to carving out Malegaon Sub – division) , the weighted averages of previous enumeration and weighted averages of current enumeration are not comparable.

SECTION 3: YIELD

8.3.1 The statistics of past yield is given in the chapter "Past System of Management". In the current working plan, there is no major felling prescribed in any working circle. However, there will be some yield of small timber and fuel wood from area of improvement and afforestation working circles. It is expected that approximate annual yield of timber and fuel wood would be 500 Cu M. and 800 Cu .M. respectively. There will be purely a silvicultural felling.

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PART - I

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER - IX

BASIS OF PROPOSALS

SECTION 1 : NATIONAL FOREST POLICY

9.1.1 National Forest Policy of India was enunciated in the year 1988 as per the Resolution No. 3.1/86- F. P., dated 7th December, 1988 of the Ministry of Environment and Forest . The basic objectives governing the policy are given below :

1) Maintenance of environmental stability through preservation and where necessary, restoration of the ecological balance that has been adversely disturbed due to large scale depletion of the forests of the country.
2) Conserving the natural heritage, the remarkable biological diversity and genetic resources, of the country through preservation of the remaining natural forests having vast varieties of the flora and fauna.
3) Checking soil erosion and denudation in the catchment areas of rivers, lakes, reservoirs to mitigate floods, droughts and retard siltation of reservoirs.
4) Checking the extension of sand dunes in the desert areas of Rajasthan and along the coastal tract.
5) Increasing substantially the forest tree cover in the country through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands .
6) Meeting the requirements of the rural and tribal people for firewood, fodder, minor forest produce and small timber.
7) Increasing the productivity of forests to meet essential national needs.
8) Encouraging efficient utilization of forest produce and maximizing substitution of wood.
9) Creating a massive peoples' movement alongwith mandatory involvement of women for achieving these objectives and to minimize pressure on existing forests.
10) The derivation of direct economic benefit must be subordinated to environmental stability and maintenance of ecological balance.

SALIENT FEATURES OF THE NATIONAL FOREST POLICY 1988 :

9.1.2 Salient features and the strategy of the National Forest Policy - 1988 governing the management of the forests are as follows :

a) The national goal is to have a minimum of 1/3rd of the total land under tree cover.

b) Severe restriction on scheme and project which interfere with forests covering the steep slopes, catchments of rivers, lakes and reservoirs.

c) No working of forests without Government approved Management Plan.

d) Non introduction of exotic without long term scientific trials.

e) The rights and concessions, including grazing, should always remain related to carrying capacity of forests.

f) Rights and concessions from forest should primarily be for the bonafide use of the communities living within and around forest areas, specially the tribal's.

g) The domestic firewood requirement needs to be substituted as far as possible with alternative resources like Bio-gas, LPG and Solar energy.

i) Diversion of forest lands for non-forestry purposes should be subject to careful scrutiny. Projects which involves such diversion should provide funds for compensatory afforestation.

j) Forest management plans should take special care for needs of wildlife conservation.

k) Effective action should be taken to prevent encroachments on forest land.

l) Forest based industries should raise the raw material needed by them through private cultivators.

m) People should be made forestry conscious by extension activities.

n) Survey of Forest Resources should be completed on scientific lines for updating information.

SECTION 2: MAHARASHTRA FOREST DEPARTMENT'S MISSION

9.2.1 Government of Maharashtra vide GR No. R & FD-FDM/1098/CR-540/F-11 dated 22nd April, 1998 has approved the mission of the Forest Department. The core elements of the mission are as under:

i) Transformation of forestry into an important sector in the state's economy.

ii) Ensuring stability of the eco-system.

iii) Ensuring equity of the various stakeholders in using the forest resources

iv) Enhancing productivity of the resources.

v) Increasing forest cover.

vi) Conservation of gene pool and bio-diversity.

vii) Becoming a responsive and transparent organization.

SECTION 3 : FACTORS AFFECTING THE GENERAL OBJECTS OF MANAGEMENT

9.3.1.

1. There is a huge demand for timber, poles, fuel wood and bamboo in the near by markets. But forest area is not able to fulfill this demand completely at present.
2. There is a heavy illicit felling in some of the areas particularly adjoining to Gujarat State and valuable species such as teak and khair etc are the most susceptible to it.
3. Rab burning is a very common practice in this area. Local people lop trees from the forest for burning of rab, in to order to grow nursery for paddy crops.
4. Most of the forest area, except few patches, are under stocked and degraded.
5. The area receives moderately good rain fall every year. But most of the valuable rain water goes waste as run-off in to the streams, rivers and ultimately in to the sea.
6. The natural regeneration of most of the species is sparse. Whatever regeneration takes place, it does not reach to the stage of established seedlings.
7. The NTFP production has gone down over the years.
8. The wildlife habitat is under threat due to illicit felling, forest fires and encroachments.
9. A large forest area has middle aged crop which requires improvement through silvicultural operations.
10. The local people need to be involved in managing and sharing the forest resources in and around their villages under JFM.
11. Most of the topography is undulating with moderate to steep slopes. Erosion of soil is a major concern in such areas.

12. Most of the area is highly prone to encroachment by the local people. The problem of encroachment on forest land has got accentuated particularly after Schedule Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act 200 has come into existence.

SECTION 4 : GENERAL OBJECTS OF THE MANAGEMENT

9.4.1 General objects of the management are as follows :

1. To conserve and improve the bio-diversity and composition of the growing stock through various silvicultural operations.
2. To tend and help the natural regeneration to establish through various silvicultural operations.
3. To manage the old plantations by using various tending and cleaning operations.
4. To increase the stocking of various NTFP species in the forest to enhance their productivity along with improvement in management and collection techniques.
5. To improve the habitat for wildlife by augmenting the supply of water and food.
6. To increase the productivity & production of fodder by introducing high quality grasses and thereby meeting its demand for the local people.
7. To restock all under-stocked and degraded areas through plantations involving active participation of local people.
8. To meet the demand of the local people for forest produce to the maximum possible extent
9. To protect and conserve the vegetative and soil cover on steep slopes and catchments of watersheds.

SECTION 5 : FUNCTIONAL CLASSIFICATION OF FORESTS

9.5.1 The Government of Maharashtra vide their Resolution No. MEF-1365/132211-Y, dt. 6-12-1968 has laid down general principles of forest classification. Based on these principles, forests of the tract dealt with have been divided into following functional classes :

(i) Protection Forests
(ii) Tree Forests
(iii) Minor Forests and
(iv) Pasture Lands

9.5.2 PROTECTION FORESTS : This includes forests which occur on very steep slopes (25^0 and above) or along river banks and forest that have become depleted due to maltreatment. Further harvesting of it will accelerate soil erosion and adversely affect the productivity of agricultural lands in the lower regions. The aim of management shall be to conserve these forests, so that they may extend their beneficial influence on the soil and water regime in order to improve the physical and climatic factors of the locality.

9.5.3 TREE FOREST : This includes forests which are situated in remote areas and are suitable for growing large sized timber and other produce of commercial value.

9.5.4 MINOR FOREST : This includes forests capable of producing small sized timber, fuel wood and have grazing potential.

9.5.5 PASTURE LANDS : This includes open areas and scrub lands which can be developed as pasture lands. This also includes small blocks of forest situated amidst intensively cultivated tracts carrying scrubby growth and capable of producing good fodder grasses.

SECTION 6 : METHODS OF TREATMENT

9.6.1 The above functional classification necessitates for suitable treatments to each class. The methods of treatment will be different for different categories of forest. The treatment proposed for various classes of forest is as follows :

9.6.2 PROTECTION FORESTS : This type of areas are allotted to protection working circle. These areas are scattered all over the division. Some of the these area falling under other working circles will be treated under category A of the respective working circle. No felling is prescribed in this area. Suitable soil and moisture conservation works will be taken up where ever it is feasible. Artificial regeneration through seed sowing and planting of suckers will be taken up in accessible areas. The forest area under this classification is 28132.503 ha.

9.6.3 TREE FORESTS : These are the areas having middle aged to mature crop. Teak is the most common species in such forests. How ever, the natural regeneration in these areas is very sparse due to various factors. These areas have been kept under Improvement Working Circle. Few measures for improvement of the existing crop have been suggested. The blank patches will be regenerated through artificial regeneration. . The forest area under this classification is 47913.798 ha.

9.6.4 MINOR FORESTS : . This category of forest is capable of producing small sized timber, fire wood and grasses. These area will be regenerated through suitable tending operations. Plantations of suitable species will be taken up in blank patches along with adequate SMC works. These areas have been allotted to Afforestation or Improvement Working Circle. . The forest area under this classification is 45481.475 ha.

9.6.5 PASTURE LAND : This includes areas under grass Kurans. The object of management in these area is to increase the production and improve the quality of kurans by introducing superior quality grass species. These areas are allotted to Fodder Management Working Circle. . The forest area under this classification is 4432.681 ha.

SECTION 7 : FORMATION OF WORKING CIRCLE

Keeping in view the object of management and method of treatment, the following working circles have been constituted. The specific treatment has been prescribed to achieve the object of forest management.

Table

Sr. No.	Working Circle	Area allotted (ha.)	Percentage of area allotted
1	Protection Working Circle.	17768.686	14.29 %
2	Improvement Working Circle.	42273.419	33.98 %
3	Afforestation Working Circle.	44263.705	35.59 %
4	Fodder Management Working Circle	5941.508	4.78 %
5	Miscellaneous Working Circle	14124.659	11.36 %
6	Wildlife (Over lapping) Working Circle	124371.977	100 %
7	Joint Forest Management(Overlapping) Working Circle.	124371.977	100 %
8	Forest Protection (Overlapping) Working Circle.	124371.977	100 %
9	NTFP(Over lapping) Working Circle.	124371.977	100 %
10	Bamboo (Overlapping) Working Circle.	5627.391	4.52 %

Chart showing the constitution of new Working Circles from Old Working Circles has been given as below.

S.NO.	Proposed Working Circle		The Working Circle from which area has been derived of previous Working Plan.				
			Protection W.C	Improvement W.C.	Afforestation W.C	Kuran W.C	Miscellaneous W.C.
1	Protection Working Circle	17768.686	10653.856	1678.08	15800.567	-	-
2	Improvement Working Circle	42273.419	1678.080	30658.651	15577.067	-	-
3	Afforestation Working Circle	44263.705	1835.817	-	33126.767	206.657	2835.817
4	Fodder Management Working Circle	5941.508	-	-		4432.681	-
5	Miscellaneous Working Circle	14124.659	-	-	-	-	7476.417
		124371.977	**14167.753**	**32336.731**	**64504.401**	**4639.338**	**10312.234**

1. PROTECTION WORKING CIRCLE :

The forest area existing on steep and precipitous slopes is allotted to this working circle. The area allotted to this working circle is 17768.686 ha. These areas are highly prone to soil erosion and part of the area is already eroded heavily. The aim of this working circle is to protect and improve the existing vegetation cover on the slopes and to prevent further soil erosion.

2. IMPROVEMENT WORKING CIRCLE :

The forest areas having young to middle aged crop which require improvement through various silvicultural operations are allotted to this working circle . Trees of higher girth classes are deficient in this working circle. The crop density varies from 0.3 to 0.6.The management objective here is to enrich and improve the composition of growing stock through various silvicultural operations. Soil and moisture conservation works and planting of suitable species in blank and under stocked areas are prescribed. The total area allotted to this circle is 42273.419 ha.

3. AFFORESTATION WORKING CIRCLE :

The areas allotted to this working circle are under stocked and degraded to large extent due to illicit felling, encroachments, grazing etc. The total area allotted to this working circle is 44263.705 ha. The object of management is to increase the vegetation cover, checking the loss of top soil and increasing water absorption capacity of the land. Plantations of suitable species will be under taken along with soil and moisture conservation works.

4. FODDER MANAGEMENT WORKING CIRCLE:

This working circle includes the area of kurans. These areas are capable of producing good quality grasses. The areas are open and tree growth is very sparse. However, the bushy growth is extensively seen in these areas. The object of management is to improve the quality of fodder by removal of bushy growth and introduction of superior grass species firstly annual and then perennial.. The total area allotted to this working circle is 5941.508 ha.

5. MISCELLANEOUS WORKING CIRCLE:

All the areas transferred to revenue department, areas under encroachment which are likely to be legalized, eksali plots, areas diverted under Forest Conservation Act 1980 etc are allotted to this working circle. The total area allotted to this working circle is 14124.659 ha.

6. WILDLIFE(OVERLAPPING)WORKING CIRCLE:

Wild life is a very important part of forest management. The entire division has been included in this overlapping Working Circle. The aim of this working circle is to provide complete protection to wild life and improvement of their habitat through scientific management interventions.

7. JOINT FOREST MANAGEMENT(OVERLAPPING) WORKING CIRCLE:

This working circle envisages to protect the forest and wild life with active participation of local communities. Already, large number of forest protection committees have been formed in villages. There is a need to strengthen this movement. The total area allotted to this working circle is 124371.977ha.

8. FOREST PROTECTION(OVERLAPPING) WORKING CIRCLE:

The area is highly crippled with illicit felling, encroachments, grazing, lopping and forest fires. In some parts, there is severe problem of illicit felling particularly in the area adjacent to Gujarat state and there is a perpetual problem of unabated encroachment on forest land in the tribal belt. These are making all the efforts of management intervention futile. Therefore the object of this working circle is to protect the forest from these maladies A police unit with police power has been proposed and to implement effectively the eviction of encroachment, the power of Collector under section 242 of Maharashtra Land Revenue Code is required. DCF , East Nashik, may send the proposal accordingly. The total area allotted to this working circle is 124371.977 ha.

9. NTFP(OVERLAPPING)WORKING CIRCLE:

This is an overlapping working circle covering the area of entire division. The object of management is protection, improvement and regeneration of NTFP species along

with introduction of non destructive methods of their harvesting. The total area allotted to this working circle is 124371.977 ha.

10. BAMBOO (OVERLAPPING) WORKING CIRCLE:

Some compartments of Dindori, Umberthan, Kalwan and Kanashi ranges contains bamboos. Such compartments have been kept in this working circle . The area allotted to this working circle is 5627.391 ha. The condition of bamboo is not very good. It is found in hacked, malformed and congested conditions. The aim of this working circle is to improve the condition of bamboo by cleaning so as to secure better yield in future.

SECTION 8 : PERIOD OF THE PLAN

The period of the plan will be of 10 years i.e. (2012-2013 to 2021-2022) .

CHAPTER - X

WORKING PLAN FOR THE PROTECTION WORKING CIRCLE

SECTION 1 : GENERAL CONSTITUTION

10.1.1 The forest areas existing on steep, precipitous slopes having a gradient more than 25^0 and the exposed rocky area have been allotted to this working circle. Most of these areas were treated under Protection Working Circle in the previous working plan also. The total area allotted to this working circle 17768.686 ha. which is about 14.29 percent of the total forest area of this Working Plan. The range wise detail of area of this working circle is given below.

Sr.No.	Range	Total area of range	Area allotted to working circle	Percentage of range area
1	Umberthan	12304.890	--	0 %
2	Surgana	13733.579	--	0 %
3	Kanashi	13516.465	2871.942	21.25 %
4	Kalwan	15733.402	5841.463	37.13 %
5	Deola	9631.794	2061.759	21.41 %
6	Dindori	10133.712	65.884	0.65 %
7	Chandwad	10262.714	1733.112	6.41 %
8	Nandgaon	27056.912	912.809	3.37 %
9	Yeola	11988.509	4281.717	36.69 %
Total		124371.977	17768.686	14.29 %

SECTION 2 : GENERAL CHARACTERS OF THE VEGETATION

10.2.1 Some of these areas are devoid of vegetation. The plateau and the surrounding areas of the steep hills are exposed rocks due to high degree of erosion. However, some vegetation is found in the lower reaches and in inaccessible valleys. The areas belong to "Tropical Moist Deciduous Forests" and "Dry Deciduous Forests". The density of the crop is generally below 0.40 .However, some areas in the valleys are having good forest crop. The regeneration of most of the forestry timber species is either absent or sparse. However, in some valleys a good regeneration of important species has been observed.

SECTION 3 : SPECIAL OBJECTS OF MANAGEMENT

1. To protect and improve the existing vegetation cover.
2. To prevent the soil erosion and save the valuable soil cover through suitable soil conservation works.
3. To arrest the run off rain water and recharge the under ground strata by taking up suitable moisture conservation works.
4. To conserve the bio-diversity and protect the ecological status of the area.

SECTION 4 : WORKING SERIES AND COMPARTMENTS

10.4.1 The detail of the working series, compartments allotted to the working series and the sequence of working of the annual coupes is given in appendix II.II.3 . The total forest area allotted to this working circles has been divided into 14 Working Series and each Working Series is divided into 10 coupes.

SECTION 5 : ANALYSIS AND VALUATION OF THE CROP

10.5.1 Stock-mapping: The stock mapping of these areas have been completed. Most of these areas are having slope more than 25 degree. Some of the rocky patches and extremely eroded areas have also been included in this working circle. These areas are having a good vegetation on slopes and in valleys, whereas the top plateaus are mostly devoid of vegetation due to lack of soil.

10.5.2.Enumeration: The tree enumeration in this area reveals that most of the crop is of lesser girth class, which may be due to lack of edaphic factors, influencing growth. Teak is the most prominent species followed by ain, neem, glyricidia etc. The result of the tree enumeration is given below.

No. of trees per hectare

Girth Classes (cms)							
16-30	31-45	46-60	61-75	76-90	91-105	Above 105	Total
40.71	33.54	13.94	5.35	2.93	1.11	0.50	98.08

SECTION 6 : METHODS OF TREATMENT

10.6.1 Most of the forest area of this division falls in Western Ghats which is ecologically very sensitive. Some of these areas are the richest source of biodiversity. Much of the area

allotted to this working circle looks barren for most of the year. However these are the habitat for very rare, endangered endemic species like Achyranthes nashikensis , Alysicarpus salim–ali , Aspidopteris canarensis , Barleria gibsonoides etc A list of endangered endemic plants found in East Nashik Forest Division is given in Appendix I-II-9. These species are seen for a very short period during rainy season only. Therefore hot spots of this biodiversity need to be studied in detail for appropriate conservation measures. Some studies have been done in MPCA area reveals the abundance of medicinal plants of ethno-medical systems. The areas of old forts such as Ramshej, Dhodap forts, temple of Saptashringi and Conservation Reserve of Borghad need detail studies. These areas are neither to be harvested nor to be worked under any silvicultural system. These areas are to be given a rest for the purpose of soil conservation.

1. The coupe due for working will be demarcated one year in advance. A rough treatment map will be prepared delineating the accessible and inaccessible areas of the coupe. The accessible areas will be further sub divided into eroded rocky areas, well-stocked areas and under-stocked areas. The treatment map of this working circle will be generated in GIS by using Geomedia Terrain model ,which will give a fairly good assessment of area under consideration .
2. No harvesting of any type including the dead and dying trees will be undertaken in this area as it may increase the incidence of soil erosion.
3. Collection of various non timber forest produce shall be permitted from the accessible areas , if it does not cause any damage and involves no felling of trees. No destructive harvesting will be permitted.
4. Suitable soil and moisture conservation works like gully- plugging, nallas- bunding etc will be under taken at appropriate places to prevent soil erosion. At slopes, not more than 4 degree (7%), sedimentary siltation tanks (Vantale) may be taken, depending on the availability of the funds.
5. The rich biodiversity of these areas will be studied and shall be documented. The steep rocks and plateaus may be the most important habitat of rare plants, birds and wild animals. The nesting sites of threatened long- billed Vultures and white back Vultures have been found in the crevices of rocks and on tall trees in the valleys of such areas .
6. In the accessible under stocked areas, tending operations of the rooted stock will be taken up wherever it is required to encourage the natural regeneration. Seed-dibbling of the pioneer species like Acacia catechu, Dlbergia sissoo, Holoptelia, Adina cordifolia, Albizzia procera, Lagerstroemia parviflora, Terminalia belerica etc will be done in blank patches to

suitably clothe the area. Root suckers of Dalbergia sissoo, Dalbergia latifolia, Madhuca latifolia, Dalbergia paniculata, Dalbergia lanceolaria, Azadirachta indica, Diospyros melonoxylon, Santalum album, Aegle marmelos, Garuga pinnata, Ougeinia oojeinensis, Bombax ceiba, Stereospermum suaveolens, Stereospermum xylocarpum, Stereospermum chelonoides, Millingtonia hortensis, Oroxylum indicum will be encouraged at places having good soil depth. Attempts shall be made to damage roots of these species preferably. Contour trenches of size 2.00 m X 0.60 m X 0.30 m shall be dug along the periphery of the above species existing in the forest areas with good soil in the division, so as to get root suckers. It will be done in the beginning of the rainy season, in order to regenerate the small blank patches. Bamboo will be planted in the accessible under stocked areas along the water courses having good soil. In the moist areas, the katang bamboo shall be preferred..

8. If any area of this working circle falls under J.F.M., it will be treated as per the broad prescriptions of this working circle only.

9. Bush sowing of seeds of suitable species like neem, maharukh, khair, sandalwood, bamboo etc. shall be carried out .No cutting operations other than for fire tracing shall be done.

10. Stump plantation of species like teak, sissoo, semal etc. may be taken up over an area more than 2 hectares in extent where there is good deposition of soil. Planting method will be strictly by using crowbar planting at 2 X 2 meters or 3 X 3 spacing, wherever possible . The seedling will require nursing as per plantation technique.

11. In addition to that, planting of species like shivan, Ailanthus excelsa , Albizia lebbeck, Madhuca latifolia etc. will be done that will not require any after care The branch cutting of Vitex negundo will also be done in blank patches with good soil The cutting of Tinospora cordifolia will also be affixed on trees at 2 meter height, to develop this good climber of medicinal importance. A list of species which can be regenerated by stump planting is given in the Appendix II.XII.3 .

12. The nursery technique , method of stump preparation and planting have been described in detail in Appendix II.XII.3 & II.XII.4 . .

13. The area will be strictly protected from forest fires and grazing in order to encourage the natural regeneration.

SECTION 7 : WORKING CYCLE

10.7.1 A working cycle of 10 years has been fixed for this working circle.

SECTION 8 : MISCELLANEOUS REGULATIONS

1. **Fire Protection :** The complete forest area of this working circle will be strictly protected from forest fires. Village forest protection committees formed in the vicinity of this area will be sensitized in this regard. A comprehensive fire fighting scheme shall be prepared to protect this area from forest fires.
2. **Closure to Grazing :** The forest area will be completely closed for grazing. Otherwise it will render all the efforts of regeneration as futile.
3. **Forest Protection Measures :** All the efforts will be made to protect forest area from illicit felling, tahal cutting and encroachments.
4. **JFM Micro Plan :** If any area of this working circle is allotted to village protection committee under JFM or FDA, it will be treated as per the prescriptions and special objects of managements of this working circle.
5. **Old forts :** There are many forts of immense historical importance, which are not under the supervision of Archeological Survey of India. The proposal to declare them " Protected" under Monument and Park Act 1974 shall be sent by CCF (Territorial) Nashik. This will provide protection to these historical monuments.

CHAPTER-XI

WORKING PLAN FOR IMPROVEMENT WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

11.1.1 The area included in this working circle is having young to middle aged crop and has the potential to regenerate naturally with the help of some silvicultural operations and gap planting. This area was previously allotted to improvement and afforestation working circle. The total area allotted to this working circle is 42273.419 ha which is 33.99 percent of the total forest area of this plan. The range wise detail of this area is given below.

Range wise detail of distribution

Sr.No.	Range	Total area of range	Area allotted to working circle	Percentage of range area
1	Umberthan	12304.890	10613.369	86.25 %
2	Surgana	13733.579	12497.351	90.99 %
3	Kanashi	13516.465	3436.722	2.76 %
4	Kalwan	15733.402	6288.383	5.06 %
5	Deola	9631.794	2857.447	2.29 %
6	Dindori	10133.712	1081.123	0.86 %
7	Chandwad	10262.714	607.179	0.49 %
8	Nandgaon	27056.912	1775.001	1.42 %
9	Yeola	11988.509	3116.844	2.51 %
Grand Total		124371.977	42273.419	33.99 %

SECTION 2: GENERAL CHARACTERS OF THE VEGETATION

11.2.1 The forest mainly belongs to dry and moist deciduous forest type consisting of teak and mixed species. The site quality is mostly IV a and IV b. The crop density in general varies from 0.3 to 0.6 except with few exceptions. The higher girth classes are deficient. The natural regeneration is sparse due to various biotic factors. However, some natural regeneration of teak, tendu, ain, dhawda is found. The common timber species found in the crop are teak, ain, dhawda, kadam, moha, shiwan, shisham etc. Suitable tending operations along with gap filling through artificial regeneration will definitely improve the crop.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

11.3.1. To improve the condition of the growing stock through various silvicultural operations and fill up the gaps through artificial regeneration.

11.3.2. To improve the productivity of the forest in order to harvest the sustained yield in future.

11.3.3. To meet the demand of local people regarding small timber and fuel wood.

SECTION 4: ANALYSIS AND VALUATION OF THE CROP

11.4.1. Stock mapping: The stock mapping in this area reveal that most of the area is having young to middle aged crop. The results of stock mapping are presented below.

Table

Sr. No.	**Type of forest**	**Well stocked**	**Under stocked**	**Unwork-able**	**Blank Area**	**Cultivations**	**Total Area(Ha)**
1	Reserved forest	35686.598	1060.592	--	292.399	3477.957	40517.546
2	Protected forest	1469.215	2.230	--	8.990	169.428	1649.863
3	Unclass forest	106.010	--	--	--	--	106.010
Grand Total		**37261.823**	**1062.822**	**--**	**301.389**	**3647.385**	**42273.419**

11.4.2. Enumeration: The tree enumeration work has been done in East Nashik division and the results are presented below. The main timber species found in the crop are teak, ain, dhawda, palas, behda, tiwas etc.

No. of trees per hectare

Girth Classes(cms)							
16-30	31-45	46-60	61-75	76-90	91-105	Above 105	Total
40.94	32.50	26.99	19.90	18.68	12.61	13.21	164.83

SECTION 5: SYLVICULTURAL SYSTEM

11.5.1 The main objective of any regular Silvicultural System is to have regeneration either by natural or artificial means. This can be achieved only when local conditions are congenial and conducive for regeneration to come up. But in the present scenario the

locality factors for regeneration are totally unfavorable. Besides, regular silvicultural system includes felling or clearance of the matured and unwanted crop to make the situation favourable for regeneration to respond well. On the contrary, in the present case, this will facilitate cultivators to grow Nagli crop with less trouble as presently almost entire floor of the forests especially in Umberthan & Surgana ranges is under the practice of Nagli cultivation. This will indirectly promote encroachment and the practice of Nagli cultivation. This crop being an annual rainfed, new seedlings which come after rains, are uprooted during the course of cultivation and at the same time the local people do not allow to take plantation in these areas. Therefore, in such situation there is no chance to regenerate this area applying any regular silvicultural system and so it has not been prescribed. However ,to make improvement in existing crop and soil to the possible extent in the present circumstances some appropriate silvicultural operations have been prescribed. On restoration of the congenial atmosphere for regeneration the suitable regular silvicultural system will be applied. **The congested** young crop will be thinned suitably. Appropriate soil and moisture conservation works will be taken up to prevent the soil erosion and arrest the run- off water. The natural regeneration coming up in the area will be tended to improve the growing stock. All the gaps having good soil will be regenerated artificially to restock the area. While choosing species for artificial regeneration both shade tolerant and light demanding species will be planted, depending upon the crown density of the crop. The details of species is given in the chapter of Afforestation Working Circle.

SECTION 6: WORKING SERIES, COMPARTMENTS AND COUPES

11.6.1 The area allotted to this working circle has been divided into 32 working series. Each working series is divided into 20 coupes in order to facilitate the working. The detail of the working series, compartments allotted to the working series and sequence of working of the annual coupes is given in the **Appendix.II,III:1**

SECTION 7: IMPROVEMENT CYCLE

11.7.1 The improvement cycle has been fixed at 20 years as the period is sufficient for establishment of the regeneration.

SECTION 8: REGULATION OF YIELD

11.8.1 The object of this working circle is to improve the growing stock by singling of coppice growth of teak and other important species. While singling coppice shoots, the side shoots will be preferred over the callous shoots. Further the stump of girth 30 cm and below at the stump height will be flushed to the ground if it is stunted ,deformed or badly injured .

It should be borne in mind that a minimum of 400 shoots per hectare will be required to be maintained as future crop in the area of operation ,and accordingly the singling should be done . The singling will be in favour of teak..

SECTION 9: AGENCY OF HARVESTING

11.9.1 The coupes will be worked departmentally as per the policy of the government.

SECTION 10: METHOD OF TREATMENT

There is much variation in locality factors particularly in Umberthan & Surgana ranges as compared to those in other ranges. Therefore, method of treatment in these two ranges of the working circle will be different from that of in other ranges. In these two ranges, first effort will have to be taken to normalise the relation between the local people and forest officers to have their full co-operation.. So long as people are not motivated for protecting and making improvement in the forests, operations like C.C.T., Nalla bunding, dressing of illicitly cut live high stumps, singling of coppice, dibbling of seeds of suitable species wherever possible will be taken to provide wages to the local people. At the same time efforts will be kept continued to motivate them for participatory management either through F.L.C.S. or J.F.M. Once they are motivated the actual management will be done by preparing micro plan and prescribing the detailed management prescriptions therein. In other ranges of this working circle there is no problem like that in Umberthan and Surgana but the crop condition is not good. There is hardly any good tree crop in these areas .Therefore, in these areas we have to concentrate on all possible measures to promote regeneration either by natural, coppice or planting seedlings. Besides, all measures mentioned above will also be followed. The rooted stock will be tended to obtain good coppice regeneration of all suitable species. Gap planting will be done wherever possible provided sizeable area (more than 2 ha.) is available. In such areas removal of dead trees, live high stumps, climber cutting, stump dressing for promoting coppice shoots, singling of coppice shoots where natural regeneration is deficient, tending of group of young poles and thinning in old plantations shall also be carried out. Nursing of natural seedlings will be made a part of the improvement operation. In selection of species, involvement of the local people should be encouraged. Felling on exposed rocks and shallow soils, along the nalla banks and surrounding the natural blanks will be totally prohibited.

When any part of this working circle is taken under J.F.M. programme that will be treated broadly in accordance with the special objects of management of this working circle.

The Micro Plan will exclusively be in consonance with the broad frame works/guidelines of the Working Plan and shall be accordance with various orders of the Hon'ble Supreme Court.

11.10.1 DEMARCATION: The annual coupes due for working will be demarcated one year in advance. If necessary, the coupes will be divided into sections.

11.10.2 PREPARATION OF TREATMENT MAP: Before starting any work, a treatment map will be prepared on graph paper in 1:5000 scale. The area will be divided into A, B and C and D sections. The grids of one hectare will be laid in B and C areas. Each grid at its cross section will have pit of size 45cmX45cmX45cm. It will be verified by the ACF minutely to check its correctness .All Treatment maps prepared either during the implementation of this plan or of the previous plan shall be digitized in Geomedia professional and stored. During the implementation of previous plan, the treatment maps have been prepared involving an expenditure. The treatment maps once prepared and stored will subsequently be used with small validation, with a trivial cost on its preparation The treatment maps will be digitized in the Working Plan Division, Nashik. The following areas will be included in various categories. The patches of promising natural regeneration will also be shown on the map.

A. Protection areas: The following types of areas will be included in it.

(i) All the areas having steep and precipitous slope i.e. slope more than 25^0.

(ii) Heavily eroded and rocky areas.

(iii) Twenty meters wide strip on either side of the permanent water course (a water course having water till January).

B. Well stocked areas: All types of areas having crown density more than 0.4 with a minimum extent of 0.25 ha. It will also include the good patches of advance growth..

C. Old plantation areas:. It will include all the patches of successful old plantations which has been included in Working Plan of Old Plantation Management (overlapping) Working Circle and will be dealt as per the prescription of that working circle .It also includes 2043.485 ha. area of plantations raised in the Division during the period of last Working Plan. These plantations will be thinned as per the thinning regime prescribed in that working circle. No operation will be carried out under this working circle The location of these plantation has been shown on maps provided with this Working Plan .

D. Under stocked areas : : All remaining areas including the blank areas having good soil depth, where the crown density is less than 0.4. The crown density 0.4 has been defined as in an imaginary cluster of 4 trees ,2 trees are required to close the canopy compete or if 3 trees are required to close the canopy it will be referred as crown density 0.2 .It will also include the patches of failed plantations, not included in Area C.

SECTION 11: NATURE OF TREATMENT

11.11.1 Marking of Trees: The marking of trees will be done under strict supervision of RFO. ACF concerned will verify the marking of all the coupes. DCF will also check the marking and satisfy himself that marking has been done properly. He will personally guide the staff. He should arrange the training of staff regarding marking and execution of works at least during first two years of implementation of the working plan. The detail of the marking techniques is given in the chapter on 'Miscellaneous Regulations'.

11.11.2 Treatment for area 'A':

1. No tree shall be marked for felling.
2. These areas have steep and precipitous slope. Therefore, most of the water goes as run-off from this area. To arrest the run-off water and raise the underground water table, suitable soil and moisture conservation works such as gully plugging, nalla bunding, bandharas etc. will be taken up. It will help in the establishment of the young regeneration also and provide water to the wildlife after rainy season.
3. No plantation will be carried out in this area. However, seeds of local suitable species will be dibbled in the accessible under stocked areas having good soil depth. In the blank areas, root suckers of Dalbergia sissoo, Dalbergia latifolia, Dalbergia paniculata, Dalbergia lanciolata ,Stereospermum personatum, Aegle marmelos and Bamboo ceiba will be encouraged by digging roots of tree around it. Bulbils of agave will also be planted to clothe the blank areas and prevent soil erosion. Cutting of vitex negundu will be planted in the area. Similarly the cutting of Tinnorporia cordifolia , will be affixed on the tree at a height of 3 meters to promote its growth . Bush sowing of seeds of suitable species like neem, khair, babul, semal, maharukh, sandalwood, etc. shall be carried out just before the onset of monsoon .No cultural operations other than fire tracing for a minimum period of 3 years shall be done. Bamboo will be planted in accessible under stocked area within 20 meters wide strip on either side of water course. Khus grass will be planted on the banks, having clayey soil .

4. Any patch having good natural regeneration will be identified and given the treatment as prescribed at the end of the chapter.

11.11.3 Treatment for area 'B':

1. The multiple coppice shoots of teak shall be reduced to two coppice shoots per stool as farther as possible. The vigourous shoots will be retained and rest of coppice shoots shall be removed. While retention ,the side shoots will be preferred .

2.All dead and diseased trees shall be removed .All dead trees which are to be removed should be dead upto 1/3 of its top height from the top.

3. . The congested pole crop in the area will be thinned out and thinning will be done in favour of teak. The thinning will be such that the adjacent pole is 1/3 distance of its height .

4. No edible fruit tree will be cut.

5 The bushes that are likely to interfere with the proper growth of coppice seedlings will be removed.

6 All climbers will be cut , other than that having medicinal value .The list of climber species to be retained is given in Appendix .

7. All pollarded trees which have not thrown shoots , will be flushed to the ground . The shoots will be singled into two straight shoots .If two straight shoots are not available one good shoot will be retained ..

11.11.4 Treatment for area 'C': This area includes old plantations which are successful and have been marked on the maps provided by the Working Plan Division . The area will be thinned according to the prescriptions given in the old Working Plan of old plantation working circle .These areas will be worked according to thinning regime provided in that overlapping working circle . No prescription has been has been provided for them in this working circle . The coupe control forms will only record the year of its working and nature of operation done in it under Old Plantation (overlapping) Working Circle .

11.11.5 Treatment for area 'D' : It includes the remaining area with crown density less than 0.4 and not included in above three categories.

1. All the dead and malformed poles shall be marked first for thinning.
2. Undesirable under growth which is interfering with the development of the seedling of seed origin will be removed.
3. The multiple poles shall be reduced to two healthy poles per stool.
4. In case of choice within the congested crop, the poles of the coppice origin will be removed whereas the poles of seed origin will be retained.

5 All the high stumps with no shoots found in the area shall be cut flush to the ground with sharp exe to get vigorous coppice shoots otherwise the singling of shoots will be done.. A separate inventory of such high stumps will be kept.

SECTION 12: NATURAL REGENERATION

11.12.1 Usually patches of natural regeneration are found in the existing crop. As given in the foregoing paragraph, these patches of promising young regeneration will be shown on the treatment map. If these patches are not attended properly, the young regeneration dies due to various factors such as trampling, forest fires etc. Therefore these patches of natural regeneration will be given the following treatment.

1. The undesirable undergrowth and climbers interfering and preventing the growth of young seedlings will be removed.

2. The coppice shoots hindering their growth will be removed. One promising coppice shoot may be retained as a security.

3. The young seedling of natural regeneration will be properly spaced out and the entire area will be strictly fire protected. The unregulated grazing will also be controlled.

4. A little opening will also be created for the young seedling by removing some of the marked trees in order to provide better light conditions.

5. All weeds hampering the growth will be cleaned form this area.

SECTION 13: SUBSIDIARY SILVICULTURAL OPERATIONS

11.13.1 Singling Operation: This operation will be carried out one year after tackling the coupe.

1. The natural regeneration will be tended again to provide better growing conditions for it. All the multiple coppice shoots will be cut back and reduced to one per stool. The healthy and most promising shoot will be retained in first year. In second year again, all the coppice shoots except the one retained in first year will be cleaned.

11.13.2 Cleaning Operation: It will be carried out in the 3^{rd} and 6^{th} year after tackling the coupe.

1. All seedlings belonging to inferior species and undergrowth interfering and hindering the growth of promising young seedlings of desired species will be removed.

2 The new coppice shoots coming up and competing with the old established shoots will be cleared.

SECTION 14: OTHER REGULATIONS

11.14.1 Fire protection: Strict fire protection will be provided to the improvement coupe for a period of five years. All the cut material of bushes, branches and dry leaves will be cleaned by the end of February month to protect it from the fire hazard. Fire lines will be cleared and burnt under strict controlled conditions. A special care will be taken to protect the promising natural regeneration. Village forest protection committees will be geared up and assigned the responsibility of protecting these coupes.

11.14.2 Closure to grazing: The annual improvement coupes will be strictly closed for gazing for a period of five years after their working.

11.14.3 JFM Micro Plans: If any area of this working circle is allotted to JFM or FDA committee, all the operations will be carried out as per the prescription of this working circle.

CHAPTER-XII

WORKING PLAN FOR AFFORESTATION WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

12.1.1 This working circle includes the forest areas which are understocked, degraded, blank and having very sparse vegetation. Previously these areas were mostly allotted to afforestation working circles. The total area allotted to this working circle is 44263.705 ha, which is 35.59 percent of the total forest area dealt in this plan. The range wise detail of the area is as given below.

Range wise detail of distribution

Table

Sr.No.	Range	Total area of range	Area allotted to working circle	Percentage of range area
1	Umberthan	12304.890	--	-
2	Surgana	13733.579	--	--
3	Kanashi	13516.465	5176.923	38.33 %
4	Kalwan	15733.402	1730.273	10.99 %
5	Deola	9631.794	3935.156	41.07 %
6	Dindori	10133.712	5393.859	53.23 %
7	Chandwad	10262.714	5697.364	55.52 %
8	Nandgaon	27056.912	19380.704	71.63 %
9	Yeola	11988.509	2949.428	24.58 %
Total		124371.977	44263.705	35.59 %

SECTION 2: GENERAL CHARACTERS OF VEGETATION

12.2.1 The area allotted to this working circle is mostly under stocked. Most of the area has got degraded due to excessive grazing, illicit felling and other types of biotic pressures. The crop density is less than 0.40 and site quality varies between IVa to IVb .The natural regeneration is almost missing or is very scarce in this area. Some of the areas have been hacked repeatedly. The areas have little chance of regeneration at its own without external interventions.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

1. To increase the vegetation cover and productivity of the land.
2. To check the soil erosion and prevent its further degradation.
3. To increase the water absorption in the soil by arresting the flow of run-off water.
4. To meet the future demand of small timber and fuel wood of local people.

SECTION 4: ANALYSIS AND VALUATION OF CROP

12.4.1 Stock Mapping: The area has been stock mapped and the result of stock mapping is given below. In general, the area is having a crop density less than 0.40 .Most of the crop found in this area is young and number of trees in higher girth classes is negligible. Some of the areas have been encroached and are in illegal possession. The summary of the area under this working circle is given below.

Table

Sr. No	Type of forest	Well stocked	Under stocked	Unwork -able	Blank Area	Cultiva-tions	Total Area(Ha)
1	Reserved forest	134.284	11913.071	--	15160.755	16416.651	43624.761
2	Protected forest	35.290	9.313	--	237.427	--	282.030
3	Unclass forest	12.000	36.970	--	307.944	--	356.914
Grand Total		**181.574**	**11959.354**	**--**	**15706.126**	**16416.651**	**44263.705**

12.4.2 Tree Enumeration: The tree enumeration work has been completed in this area and the results are presented below. On an average, there are 33.08 trees per hectare found in this area. It can be seen from the data that most of the crop found in this area are in the pole stage. Practically trees in the higher classes are absent which makes it mandatory to regenerate this area artificially. The prominent tree species found in this area are teak, ain, neem, palas, babool, dhawda, glyricidia etc. Some NTFP species are also found in this area, though they are comparatively much less in number. The important ones found in the tree enumeration data are hirda, behda, moha, tendu, apta etc.

No. of trees per hectare

Table

Girth Classes(cms)							
16-30	31-45	46-60	61-75	76-90	91-105	Above 105	Total
15.74	9.58	5.11	1.44	0.73	0.24	0.24	33.08

SECTION 5: AFFORESTATION SERIES, COMPARTMENT AND COUPES

12.5.1 The total area of the working circle has been divided into 25 series for sake of distribution of work. Each working series has been further divided into 20 coupes. The detail of working series, compartments allotted to the working series and sequence of working of annual coupes is given in the **Appendix II, IV : 1.**

SECTION 6: METHOD OF TREATMENT

12.6.1 DEMARCATION AND TREATMENT MAP: The annual coupes due for working will be demarcated one year in advance. The treatment map will be prepared by field staff on graph paper in 1:5000 scale. All A, B, C and D areas will be properly delineated on the map. In B area, grids of 0.50 ha and in C and D area, grids of one hectare will be laid. It will be verified by ACF and DCF. All the prominent features of the site will be shown on the map. If any patch of natural regeneration exists, it will also be shown on the map. The soil type will also be recorded in the grid, which will subsequently help in identifying the species most suited for that soil type The various categories will include the following types of areas.

Protection Areas: This will include following types of areas.

(i) Areas having slope more than 25^0

(ii) All the heavily eroded areas, rocky patches and refractory areas not suitable for plantation.

(iii) Twenty meters strip on either side of the permanent water courses.

Under Stocked Areas: All the areas having crop density less than 0.40 will be included in this category.

Pole Crop and Old Plantation Areas: The successful old plantations and natural growing pole crop of desired species which can be retained as a future crop will be included in it. However the silvicultural operation in these plantations will be carried out as per the provisions listed in Old Plantation (overlapping) Working Circle. No operation will be carried out under this Working Circle, The coupe control form will only state the work done under Old Plantation Management (overlapping) Working Circle in specified year.

Well Stocked Areas: It will include all the areas having crop density more than 0.4.

SECTION 7: NATURE OF TREATMENT

12.7.1 As per the treatment map, the coupes will be divided into four parts, depending upon the criteria enlisted above. The various types of treatment for different categories are as given below.

12.7.2 Treatment for Area 'A': The following types of treatments will be carried out in this area.

(i) All these areas are either on steep slopes or are highly eroded, hence no green tree will be felled in this category.

(ii) Suitable SMC works such as nalla bunding, gully plugging, gabbian structure, retaining wall etc will be taken up in this area. In highly eroded and refractory areas where loose boulders are available, bunding of loose boulders along the contour line will be made at a gap of 20 metres to prevent further soil erosion. This will be strengthened by planting the Agave bulbils and cuttings of nirgudi (Vitex negundo) in the soil deposited in front o f loose boulder bunds in the second year.

(iii) Seeds of local pioneer species like semel, lendia, tiwas, maharukh will be dibbled in accessible areas having good soil depth. Bulbils of Agave and cuttings of ficus species in moist areas as mentioned in Chapter of Working Plan for Protection Working Circle, will be planted in suitable blank areas to clothe the soil and prevent further soil erosion. The root suckers will be promoted, in the manner mentioned in chapter of Working Plan for Improvement Working Circle.

12.7.3 Treatment for Area 'B': These are the understocked areas, where mainly the plantation activity will be taken up. The suitable model of plantation will be selected as per the site conditions. The area will be divided into three zones i.e. I, II, III depending upon the depth of soil. The various activities of afforestation and SMC works will be carried out, as

per the zone and model of plantation. The list of various plantation models is given in the **Appendix Table-1 or Part-II Appendix No.II.XII-1**.

12.7.4 The different operations of plantation will be carried out as per the sequence given below.

Planting of difficult areas – Few posts of RFO (EGS) has been sanctioned in East Nashik Forest Division and they will be assigned the difficult plantable areas to afforest, like the hill slopes, plateaus etc. The annual target shall be fixed for them by the DCF East Nashik Division to the extent of efforts involved. These area will require a different choice of species, which may include Acacia tortalis, Dolichandrone falcata , Azadirachta indica (if the rainfall is less), Acacia ferruginea, Cordia myxa, Sterculia urens, Prosopis spicigera, Hardwickia binata, Albizzia amara, Azardirachta indica, Acacia catechu, Acacia leucophloea, Buchanania lanzan ,Boswellia serrata, Ficus arnottiana, Prosopis spicigera, Zizyphus xylophyra, Bauhinia recemosa etc. Few of these species have a prominent taproot system. Tall seedlings of these species with good developed root system will be planted in the pit preferably with a changed soil from the nearby nalla. The list of compatable species for different type of soils is given in the Appendix II.XII.2.This may make survival more effective The necessary soil conservation measures will also be taken up in the area to conserve soil. The planting model will be the standard model adopted for such area. In the area, having good soil, the deep CCT of one meter depth will be taken up, to conserve maximum moisture. The seedling should have root shoot ratio as 1.25:1 for effective survival. The RFO(EGS) will be the planting expert for the difficult forest areas. This target oriented work of afforestation will make his performance more visible. The right choice of the species supported by a good sized seedling, with a well developed root system shall be the key to the solution. The species to be raised by the RFO in nursery, commensurating with the soil type, shall be in consultation with the DCF and the ACF concerned. The soil mapping as done at the time of preparation of treatment map, will help in selecting the right species to be raised in the nursery.

12.7.4 - 1. Pre-Planting Operations: In the first year of plantation, all the preparatory and pre-planting operations will be taken up.

2.Cleaning and Tending: The undesirable under growth which is likely to interfere and prevent the growth of planted seedlings will be cleaned. All the live high stumps in the area will be cut flushed to the ground and dressed with axe. However before flushing to the ground, an inventory shall be prepared. The existing rooted stock of valuable species will be tended properly. All the multiple shoots will be reduced to one. Only the most promising and established coppice shoot will be retained and side shoots will be preferred over callous

shoots. Tending will be done in favour of teak or superior miscellaneous species of timber importance.

3.Fencing: The area will be protected properly by taking up TCM/stone TCM or a live hedge around it. The care will be taken that no TCM is dug across the contour particularly on high slope areas. Instead, live hedge will be taken up in such area. The TCM and live hedge will be strengthened by sowing seeds of local species and planting of Agave bulbils. The tussocks of khus, bamboo rhizomes and cuttings of euphorbia may also be planted , depending upon its availability.

4. SMC Works: Suitable SMC works such as nalla bunding, gully plugging, trenches etc will be taken up in appropriate quantity as per the requirement of the site. Care will be taken that such works are taken up at technically suitable sites so that these do not get washed away in the first rain itself.

5. Nursery: It is the most important component of plantation activity. A healthy nursery is the backbone of a successful plantation activity. Nursery must be raised well in time to get a sturdy and robust stock. The requirement of the seedlings will be calculated well in advance, depending on the soil type and the species suited to the particular soil. The species will be chosen suited to the soil type as given in the Appendix II.XII.2 .It is emphasized that seed collection of various important species will be done through women Self Help Groups by identifying the area of collection, like Anjan , Kansar , Chinch , Hiwar and Medsing in Malegaon range, Tiwas in Satana range , Tetu in Harsul range , Sissoo , Karanj , Neem in Sinnar range and Glyricidea in Igatpuri range .The collection of seeds through women self help group will be organized at CCF level , as availability of seed plants is around whole circle. The local round officer will enter into a formal agreement with women SHG , for collection of specified quantity of seeds at specified rates. Rates of collection to be given to SHG members shall be decided by CCF (Territorial). The choice of species to be planted as per the requirement of the site , will be decided by the DCF/ACF and the Range forest officer concerned. Sowing of seeds shall be done in nursery beds of standard size in the month of May / June for getting seedlings for the next year plantation targets. Early sowing gives taller seedlings. Beds will be weeded three times during monsoon and then left to grow till mid February when these will be transplanted into polythene bag of size 12.5 cm X 25 cm , by first dipping it into 10% solution of Indol Butic Acid The object is to procure planting stocks of desired size at the time of planting. Necessary culling in beds shall be done , so as to get not more than 2000 seedlings per bed. Barring khair , babbul

nearly all plantable species can be planted through root shoot stumps.. The seedlings grown on the mother bed will be first transferred to polythene bags , in February , after by making its root-shoot dipped in10% solution of Indol butic acid. Seedlings of neem,sisso,shivan etc can be transplanted to the polythene bags as a whole seedlings .Further grading of seedlings is necessary to eliminate culled, diseased and damaged seedlings. Only good stumps shall be transplanted in the polythene bags , for which the field staff should be given proper instructions. ACF and RFO should do frequent inspection of the nursery. Care will be taken that the local people are also taken into confidence , while deciding the species to be planted. The planting stock should include nearly 15 percent edible fruits and NTFP species. Good seed of known source will be procured for raising nursery. Seeds from the drier areas will be preferred The seedlings in the beds will be culled at appropriate time to get a healthy stock.

Digging of Pits or Trenches: A suitable pits or trenches model of planting shall be selected, depending upon the rainfall and depth of soil in the area. Pits or trenches of appropriate size will be dug as per the model of plantation selected. Care will be taken that pits or trenches are not dug under the trees or at sites which are not fit for planting. The size of pits or trenches will be checked by the ACF before these are filled up partially before plantation. At the time of partial filling, some farm yard manure or phosphatic fertilizer shall be mixed in the soil. If soil is not good, the soil of surrounding area will be scrapped and shall be used for filling The work of filling of pits must be carried out before May and shall be inspected by the ACF (concerned). Refilling of pits / trenches is an important plantation activity and need to be inspected .

12.7.5 - 2. Planting Operations: All planting operations will be taken up in the next year. The planting of teak will be done with stumps at the onset of the first monsoon shower. Good stumps will be planted in an slanting hole. The miscellaneous species will be planted in pits / trenches , within a fortnight from the outbreak of monsoon , depending on the site requirement. The seedlings to be planted shall of good height. The seedlings which have got damaged in transportation will be rejected.

Weeding, Soil Working and Casualty Replacement: Proper weeding and soil working will be done timely as per the model of plantation. It is very essential for proper growth of planted seedlings. Complete casualty replacement will be carried out after its first weeding and healthy stock shall be used for it.

Tending of rooted stock: The rooted stock that was cut back in the first year will be singled again. Only one healthy and promising coppice of desired species will be retained. Side shoots will be preferred over callous shoots

12.7.6 - 3. Steps to overcome limiting factors: Several limiting factors have been observed which results into failure of plantations. Some of them are given below.

(i) Un**timely plantation targets:-** It has been observed that sometime plantation targets are given to the field staff very late. In such circumstances, a healthy nursery can not be prepared and the stock remains poor and results into a failure of plantation.. In case the plantation targets in the division are received after the month of January, the targets should be shifted to next year unless the rooted stock is available in the nursery as per the procedure envisaged in para 12.7.4-5.. The nursery technique should include raising of seedlings in mother beds of size 40 ft X 40 ft X 6 inches in May / June on the onset of monsoon and later on transferring these small seedlings into polythene bags , after giving a treatment of 10% Indol butic acid , in the first fortnight of February , soon after the break of dormancy period. This will provide good size seedlings at a low cost, and that too in a short time. This may compensate even for a late arrival of targets.

(ii) Proper selection of plantation model: It is very essential that a proper model of plantation is selected as per the condition of the site, depth of soil and rainfall in the area. A trench model will be better for areas receiving very scanty rainfall. In areas receiving medium to heavy rainfall, pits model shall be adopted.

(iii) Choice of species: The choice of species will depend upon the type of soil, depth of soil, potential of rainfall etc. Important species like Acacia catechu, Dalbergia latifolia, Dalbergia sisoo, Anogeissus latifolia, Acacia arabica, Acacia nilotica, Bombax ceiba, Adina cordifolia, Syzygium cumini, Albizzia amara, Albizzia lebbek, Albizzia procera, Azardirachta indica and Terminalia species , Acacia leucophloea etc.are recommended for planting along with Tectona grandis. Species should be chosen depending upon the site / soil conditions of areas to be planted. It is clarified here that Tectona grandis Dalbergia sissoo, Adina cordifolia , Bombax ceiba and Terminalia species are light demanding species while Syzygium cumini is a shade tolerant species. The planting model should contain a mixture of light demander and shade tolerant species both . The list of such species is given in Appendix II.XII.3. The nursery techniques of most of the species mentioned aforesaid , have been developed earlier. Tall seedlings with good root growth and root shoot ratio of

1.25 : 1 , should be preferred for planting as these are strong enough to withstand adverse conditions in the field like excessive heat, damage by animals and low moisture availability in sub-soil. In selection of species , the local villages may also be consulted. Thus, their local demands will be considered , while selecting the species , so that they take keen interest in protection of these plantations. Some of the areas of this division such as Nandgaon, Yeola and Chandwad are highly prone to grazing. In such areas, the choice of species shall be made with a view to overcome this problem .The non palatable species shall be preferred.

(iv) Analysis of reasons for previous failures: Before taking up any new plantation, the reasons for failure of old plantation in the same area must be studied. Efforts will be made to eradicate those factors in order to make the plantation successful.

(v) Protection from biotic interference: Most of the past plantations have failed due to illegal grazing, forest fires and hacking for the purpose of fuel wood. So it is very essential that these things are controlled to make the plantations successful. In Nandgaon, Yeola and Chandwad ranges sheep grazing is the major cause for failure of plantations , and need to be prohibited.

(vi) Involvement of local communities: Any village in which plantations are to be taken, forest protection committee must be constituted. They will be involved at every stage of the plantation scheme to make it successful.

12.7.7 Treatment for Area 'C': These are the areas having good natural pole crop or successful old plantations. These will be dealt as per the provisions of Working Plan for Old Plantation Working Circle. The unsuccessful plantations shall be reboised as per prevailing rules.

12.7.8 Treatment for Area 'D': This is a well stocked area having crop density more than 0.40.The area will be given treatment as given below.

(i) No plantation activity will be taken in this area .

(ii) All the high stumps with no shoots will be cut flush to ground and dressed with axe.

(iii) The multiple pole crop will be reduced to one. Only the most promising stem will be retained.

(iv) The climbers on trees will be removed except those having medicinal value. The dead, dying and diseased trees will marked for felling and removed. Only two such trees will be retained for the benefit of wild life.

(v) Undesirable under growth interfering with seedling regeneration will be removed.

12.7.9 Treatment for patches of natural regeneration: The patches of natural regeneration need special care. The natural regeneration takes place after rainy season. But it does not establish due various reasons such as trampling by cattle, frequent forest fires and hacking of wood for fire wood by villagers. To boost the natural regeneration, following treatment will be given to such patches.

(i) Such areas of natural regeneration will be identified at the time of preparing the treatment map of the coupe.

(ii) The undesirable undergrowth will be cleaned to create the healthy conditions and remove the congestion. All the weeds will be cleaned.

(iii) Some opening will be created by marking and removing the dead, dying, diseased and malformed trees in this area.

(iv) The area will be strictly protected from fire.

(v) The natural regeneration will be thinned if it is congested and proper spacing will be provided.

SECTION 8: OTHER REGULATIONS

12.8.1 Fire Protection: The whole afforestation coupe will be strictly protected from forest fires .The fire tracing will be carried out in the required width. Villagers will be sensitized and involved to protect the area particularly in fire season. Every year in July , a fire assessment will be carried out , using satellite data , by carrying out digital image processing .This annual study will give an broad assessment of the area burnt till June .

12.8.2 Closure to Grazing: The coupe will remain closed for grazing for a period of five years.

12.8.3 Micro Plans JFM or FDA: If any area of this coupe is allotted to village committee for JFM or FDA, the treatment to that area will be given as per the prescriptions of this working circle.

CHAPTER-XIII

WORKING PLAN FOR FODDER MANAGEMENT WORKING CIRCLE

SECTION 1. GENERAL CONSTITUTION

13.1.1 This working circle includes the areas which are traditionally maintained as kurans. These areas mainly lie in Dindori, Nandgaon, Chandwad and Yeola ranges. These grasslands form a unique ecosystem and habitat for a variety of grassland birds. The lands are good for production of perennial grasses. The total area allotted to this working circle is 5941.508 ha which is 4.78 percent of the total forest area. The range wise detail of the area is given below.

Range wise detail of distribution

Sr.No.	Range	Total area of range	Area allotted to working circle	Percentage of range area
1	Umberthan	12304.890	-	-
2	Surgana	13733.579	-	-
3	Kanashi	13516.465	-	-
4	Kalwan	15733.402	77.235	0.49 %
5	Deola	9631.794	-	-
6	Dindori	10133.712	3078.251	30.38 %
7	Chandwad	10262.714	1095.180	10.67 %
8	Nandgaon	27056.912	1027.988	3.80 %
9	Yeola	11988.509	662.854	5.52 %
Grand Total		124371.977	5941.508	4.78 %

SECTION 2: GENERAL CHARACTERS OF VEGETATION

13.2.1 Most of these areas are denuded with scanty tree growth. The area is represented with poor growth of grass species such as Pawanya, Shedya, Kusada, Chimanchara etc. There are some other inferior quality grasses also in these areas which need to be replaced with better species of grasses. The forests mainly belong to dry deciduous and tropical thorn forest classification. The crop density is less than 0.40 and some shrubs are also found in the area. The grasses are the inalienable component of a dry-deciduous forest. Developing a good grass land can be a good managerial practice in this area. According to Champion & Seth the grassland of India, are not the climate climax grassland, these are secondary seral stage and it may be a stable 'pre-climax' under the influence of fire and grazing. The different type of grass commonly found here are:-

(1) Andropogon schoenanthus- 3-6 feet, Ligula ovate, scarious. Leaves from an amplexicaul base, linear, 1 feet, or more glabrous.

(2) Arthraxon microphyllus- Serial spikelet solitary, especially on the upper part of the spikes.

(3) Arundenella metzic- Herbs, annual, erect 30-60 cm high, turfted culms, Leaves 20 – 23 x 0.1 cm, pilosa on both the sides.

(4) Arundinella pumila- Herbs, annual, erect, 12-27 cm high, culms erect smooth. Leavs 3-13 x 0.51a5 cm. Panicles 6-15 cm long.

(5) Cynodon dactylon- Stem perennial, prostrate, often creeping and rooting to a great extent.

(6) Eriochloa polystachya - 2-3 ft high. sheath pale, rather gloucous, leaves dark green, with few hairs at the base.

(7) Ischaemuma indicum- Herbs, erect or suberect, turfted upto 60 cm high. Leaves 3.0-6.5x0.4-0.6. Linear or linear-lanceolate, acuminate, ligules, membranous, ciliate.

(8) Ischne pulchella- Herbs, annual ascending, 30-35 cm high. Leaves 2.5-4.5x0.5-1.0 cm, ovale-lanceolate or ovate-elliptic.

(9) Isachne globosa- Herbs, slander, turfted, erect or sub-erect leaves 3.2-6.3x0.4-0.7 cm. linear lanceolate or ovale lanceolate

(10) Ischne gracilis- Herbs, annual, weak, erect from decumbent base 12-20 cm high. Leaves 2-6x10-1.7cm, elliptic.

(11) Isachne australis- Rooting with lower notes, leaves rough lanceolete.

(12) Ischoemum aristatum- culm erect or decumbent glabrous, 1-2 feet or more. Nodes and sheaths glabrous or puberulous, the latter especially at the margin.

(13) Paspalum compactum–Stem bent and rooting at the lower level 1 or 2 joints, then erect, absolutely quadrangular, glabrous.

(14) Paspalum sanguinale- Herbs, annual, turfted upto 90 cm high, branches ascending, culms branched, rooting at brace. Sheath with the spreading hairs.

(15) Paspalum pedicellare Annual, 30 cm hig, turfted, culms erect or geniculately ascending. Leaves 6-15x0.2-0.3 cm, linear lanceolata finely acuminate.

(16) Panicum flavidum- Perennial, turfted, erect or ascending from decumbent base. Leaves 8-15x0.5-1.0 cm, lanceolate, sheaths hairy at throat.

(17) Panicum compositum- Herbs perennial, 30-40 cm high, culms slander, bran leaves 3-11x0.9-2.2cm, ovate or ovate-lanceolate, sheaths ciliate.

(18) Panicum psilopodum- Herbs 15-35 cm high, slander, turfted, erect or basically geniculate, leaves 6.5-10.0x0.4-0.6 cm linear.

(19) Paspalum destichem- culm slander, creeping and rooting. Often to the great extent,

the ascending part entirely covered with the leave sheaths.

(20) Panicum punctatum- culm glabrous. 2-3 feet high. Creeping and floating at the lower nodes. Common in water coarse.

(21) Thelepogon elegaus- A beautiful grass, 2-3 feet high.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

13.3.1 (i) To improve the productivity and quality of grasses in kuran areas.
(ii) To meet the local demand of grasses in the adjoining area.
(iii) To prevent soil erosion and improve water absorption of the soil.
(iv) To manage the grassland on rotation basis.

SECTION 4: ANALYSIS AND VALUATION OF CROP:

13.4.1 Stock Mapping: The entire area of this working circle has been stock mapped and the results are presented below. Most of the area is devoid of any vegetation. Only some trees in the lower girth classes and bushes are found in this area.

Sr. No.	**Type of forest**	**Well stocked**	**Under stocked**	**Unwork -able**	**Blank Area**	**Cultivations**	**Total Area(Ha)**
1	Reserved forest	289.464	576.546	--	4240.627	834.871	5941.508
2	Protected forest	--	--	--	--	--	--
3	Unclass forest	--	--	--	--	--	--
Grand Total		**289.464**	**576.546**	**--**	**4240.627**	**834.871**	**5941.508**

13.4.2 Enumeration: The tree enumeration in the area falling under this working circle shows that there is very sparse tree vegetation in this area.

No. of trees per hectare

Girth Classes(cms)							
16-30	31-45	46-60	61-75	76-90	91-105	Above 105	Total
14.09	4.22	0.62	0.31	0.21	0.10	0	19.55

SECTION 5: WORKING SERIES, COMPARTMENTS AND COUPES

13.5.1 The area has been divided into 10 .working series. Each working series has been divided into 10 coups. The detail of working series, compartments allotted to the working series and coupes is given in the **Appendix II, V-1.**

SECTION 6: METHOD OF TREATMENT

13.6.1 Demarcation: The coupes will be demarcated one year in advance from the rescribed year of working.

13.6.2 Treatment Map: The treatment map will be prepared by RFO and it will show the following details.

13.6.3 Area 'A'-Protection Areas: (i) Areas having slope more than 25^0
(ii) All the heavily eroded areas and rocky patches.

13.6.4 Area 'B'- Under Stocked Areas: It will include all the other areas of the blank areas and the areas not included in Categories A,C & D.

13.6.5 Area 'C' –Pole crop and old plantation areas: It will include all the areas having good crop of teak and other species suitable for retention as a future crop. It will also include the patches of successful old plantation, but such areas should be more than 2 ha and will be dealt by the provision of Old Plantation Management (Overlapping) Working Circle.

13.6.6 Area 'D'- Well stocked Areas: Areas having more than 0.40 crown density will be included in this category.

SECTION 7: NATURE OF TREATMENT

The treatment to be given for various categories of areas will be as follows.

13.7.1 Treatment for area 'A' : The following treatment is prescribed.

(i) No felling of any tree or bush will be carried out in this area
(ii) Suitable soil and moisture conservation works such as nalla bunding, gully plugging, WATs etc. will be taken up in the area to arrest the flow of water and prevent soil erosion.
(iii) Sowing or slips of species Heteropogon, Dichanthium anulatum, Borthiochloa intermedia shall be sown/planted in 25 ha. of the annual coups area, where the soil is fragile. These species are the strong soil binders.
(iv) Seeds of local species will be dibbled and cutting of Vitex spp. along with Agave bulbils will be planted in the accessible area having good soil. Root suckers of important species as mentioned in the Chapter of Working Plan for Protection Working Circle should also be encouraged where possible.

13.7.2 Treatment for area 'B' : The development of grass land will be the main activity.

Development of Grass Land:- The existing grass land basically abundance in *Schima nervosum Cyperus rotundus, Eragrastisnstis tenella, Ischaemum rugorum,* but there is a need to introduce a good foliage grass for grazing and stall-feeding purposes. To start with, it is proposed to first introduce annuals like Dinanath (*Penninsetum pedicellatum*) by direct sowing and after it has established in a year or two, it will be followed by introduction of perennial like *Heteropogen contortus, Chrysopogon fulvus and Dichanthium annulatum.*

Dinanath (*Pennisestum pedicellatum*)- It is a good grass for raising in monsoon season i.e. for kharif season. The optimum temperature for growth is $30\text{-}35^o$ Celsius and ideal rainfall for its growth may be around 500 to 650 mm, but it can grow well and produce seeds even in lesser rainfall. It grows well on fertile loamy soils, but with green manure, it can be grown on sandy soils as well. Dinanath grass can tolerate both acidic and alkaline soils. A fast maturing grass, it

has a good compatability with legume. Seeds are sown by simply broadcasting , or preferably dribling one cm below ground in a line and nearly 40-50 cm apart and it should be sown just before the onset of the monsoon, when one or two good showers have been received. Seed rate per hectare is 1-2 kg. It thrives well in area receiving annual rainfall from 500 to 1270 mm and grows on wide range of soil types and is considered to be a drought resistant. It may be mixed with *Cenchrus, Dichanthium, Heteropogon, Schima, Chrysopogon* etc. In the first year, the grazing should be avoided ,however, it can be cut for stall feeding, 10 cm above ground, after four months of its sowing in exception case.

The following technique will be adopted for developing the grassland.

In the coupe of 1st year, nearly 10 ha. area in each coupe (total 100 ha. every year) will be sown though the method of broadcasting and seeds will be sown after the onset of monsoon. For easy establishment, a part of the area in a square of one chain (20M) by one chain (20M), will be controlled burnt, before monsoon and seeds will be sown over it proportionally. Dinanath is easy to establish and once establish, it rejuvenates itself, through annual seedlings. In each coupe, Dinanath grass will be sown in the first year; subject to a total of 100 ha. each year. Seeds will be preferably purchased from Central Grassland Research Institute, Jhansi.

Subsequently in third year, perennial grass like *Heteropogon contortus, Chrysopogon fulvus, Dichanthium annutatis* will be sown or planted as the case may be. The introduction of the perennial grasses will be done either directly by broadcasting of the seeds on the forest area, that has been planted earlier with Dinanath, or through slips, that are generated in the nursery, by sowing of seeds.

Nursery Technique:- The process of raising grass seedlings/slips is started in the middle of May. The nursery is well prepared, by ploughing and seed beds of size (6Mx6M) are prepared. 30 Kg. farmyard manures + 25 gm Urea + 75 gm of single superphosphate are mixed in each bed. The bed is watered 4-6 days before sowing and germinating weeds removed from in each bed. Grass seeds are sown @ 40-50 gm/bed at 0.4 to 0.5 cm deep in lines at 10 cm apart. About 2 gm of Bavistin is mixed with sun-dried seeds. Beds are watered using a rose cane and it is covered with wet gunny bag the seeds start germinating in 3 to 4 days. Gunny bags are then removed soon after germination starts and it is done in the evening time. The germination of de-husked seed is recorded as 94-98% as compared to husked seeds which is 35-42%. The stored seeds show better germination percentage as compared to freshly collected seeds. The seed density varies from 4,50,000 seeds to 70,8,000 seeds/kg. Twelve beds are required to provide seedlings for planting one hectare of grass land. Grass slips will be ready for transplanting after 4-6 weeks, when these will attain 15-25 cm height.

Seedlings/slips are transplanted in well-prepared field immediately after the onset of monsoon. The nursery beds are watered copiously before pulling out the seedlings. The seedlings/slips are pulled out with ease and without damage to their root system.

Nearly 33,000 slips are planted per hectare. To facilitate an early establishment, the area of size 60M x 60M may be burnt in patches, before monsoon and planted with grass slips. The soil around slips need to be pressed gently.

In addition to perennial grass, legumes like *Stylosanthus* hamata will also be planted. *Stylosanthus hamata* is also known as Caribbian stylo. It is a herbaceous and dichotomously branched perennial. It attains the height 1.2 Meter with leaves trifoliate, leaflet lanceolate acute and glabrous with 4-6 pairs in vain.

Grass Type- The whole of India has been divided in five grass types and this area falls into *Schima-Dichanthium* type . This type covers whole of peninsular India, including central Indian plateau. It lies between 8^0 to 28^0 N and 68^0 to 87^0 E. The dominant perennial grass species are (i) *Dichanthium annulatum (ii) Schima nervosum (iii) Bothriochloa pertusa (iv) Chrysopogon fulvus (v) Heteropogon contortus (vi) Iseilema laxum (vii) Themeda triandra (viii)Cynoddon dactylon (ix) Crymbopogon* species.

A large amount fodder requirement of the village cattle is met through agricultural land, from where forage, silage and hay are obtained. These are either cultivated or are obtained as a by product. Coming to fodder development in forest, it may be pertinent to note that there is a rich generic diversity of natural grasses and one third of the grasses found in forest have fodder values. Most of the grasses belong to tribe Andropogoneae, Paniceae and Eragrosteae. Similarly there are many genera of family Leguminosae; that has foliage value. Major forage genera exhibiting forage bio-diversity includes legume like *Desmodium*, Lablab, *Cynodon, Panicum, Pennisetum, Cenchrus, Lasiuries* etc. and browse plants like *Leucaena, Sasbania, Albosia, Bauchima, Cassia, Grewien* etc. The following procedure is prescribed.

(i) All unwanted bushes and shrubs will be removed from the area.

These grasslands form a unique habitat for a variety of birds such as GIB, stone curlews, Indian courser, larks, babblers, munias, falcons, partridges, quails, peacocks and animals such as black buck, wolf etc. Therefore, no plantation of tree species will be undertaken in these areas. They will be maintained as grasslands only.

(ii) Appropriate SMC works such as nalla bunding, gully plugging retaining wall will be carried out to absorb the rain water and prevent soil erosion.

(iii) In the sloppy areas where soil depth permits, staggered contour trenches of the size 4m x 60cms x30cms will be dug. The end to end distance of the trenches will be 4m and distance between two lines will be kept roughly 5 metres depending upon the slope of the site. In this way, approximately 250 trenches per hectare will be formed.

(iv) In the plain areas, continuous trenches of the size 60x30 cms will be dug. The distance between two lines of trenches will be 20 metres. Approximately 500 metres per hectare of such trenches will be prepared. Between two lines of trenches, 25 raised beds of the size 8mts x1.20mts x15cms per hectare will be prepared. If site permits, proportionate area to the raised beds may be ploughed also and site will be prepared for sowing of grass seeds/slips. This will be an alternative to patch burning.

(v) Tussocks of superior grass species such as marvel, Pawanya, Dinanath, Shedya, Cenchrus, Stylosanthus hamata etc. depending upon the local demand will be prepared in the nursery.

(vi) Good and robust grass tussocks prepared in the nursery will be planted on the trenches after the onset of the monsoon. However, seed of the same species will be broadcasted on

the raised beds or ploughed area before the onset of monsoon. Three, two and one weeding will be carried out during first, second and third year respectively.

(vii) Complete casualty replacement will be done during first and second year. Casualty replacement of grasses will be done with the tussocks only.

(viii) The fodder grasses raised in this manner ordinarily should not be allowed to be cut at least during first two years of planting so that it is allowed to flower and multiply properly. Subsequently, cutting of grasses will be allowed only after October month when the seeds are set in and its dispersal has taken place.

(ix) Most of these grasslands have been spoiled due to heavy grazing by sheep particularly in Nandgaon, Chandwad and Yeola ranges. Therefore sheep grazing will be totally banned in these areas as per the Grazing Policy. Sheep and goat due to their close level grazing should not be permitted to graze in the forest area, as they uproot seedlings from the root.

(x) Rational grazing has been prescribed for the cattle.

13.7.3 Treatment for area 'C':

1. No planting shall be done in these areas.
2. The congested pole crop of natural and plantation origin shall be marked for thinning as per the rules given in the chapter of 'Old Plantation Management (Overlapping) Working Circle'. Accordingly the number of poles per hectare will be reduced to create the healthy conditions for their growth.
3. All the dead and malformed poles shall be marked first for thinning.
4. Undesirable undergrowth which is interfering with the development of the seedling will be removed.
5. The multiple poles shall be reduced to one healthy pole per stool.
6. The poles of the coppice origin will be removed whereas the poles of seed origin will be retained. In case of choice within coppice crop, the side shoots will be preferred.
7. All the high stumps found in the area shall be cut a flushed to the ground with sharp axe to get vigorous coppice shoots.
8. Guinea grass, being a shade tolerant perennial grass will be sown/ planted in the area either through seeds or through slips in subsequent years.

13.7.4 Treatment for area 'D':

1. No planting will be done in this area.
2. All the climbers on the trees will be cut except those having medicinal properties.
3. All the dead and malformed trees will be marked for felling. Two dead trees per hectare will be retained for benefit of the wildlife.
4. All the multiple coppice stems will be marked to reduce their number to one per stool. The most promising stem will be retained.
5. The undesirable undergrowth preventing the development of the seedlings of desired species will be removed.

SECTION 8: OTHER REGULATIONS

13.8.1 Fire protection and closure to grazing: The coupe will be fire traced every year to protect it from fire. It will also be closed for grazing at least for five years. Village protection committees will be involved in fire tracing and its protection.

13.8.2 JFM micro plans: If any area of this working circle is included in the JFM or FDA micro plans, it will be treated as per the prescriptions of this working circle.

SECTION-9 : GENERAL INSTRUCTION

Initially pockets of perennial grasses will be developed in each type of the area. This pocket may vary in size (1000 sq m to 2000 sq m per 2-3 ha.) depending on resource availability. Such pockets will serve two purposes – First as source for planting material and secondly seed formation in such pockets will help in auto-seeding & spread of the grass in future.

SECTION-10: INSTRUCTION REGARDING WILDLIFE:-

The area abundance in population of black bucks and this species has shown the preference for the grass species, stated in Appendix- II XV-16. Out of these listed plants, Apluda mutica, Botriochloa odorata, B. pertusa, C. martinii, Cynodon dactylon, Dactyloctenium aegyptium, Desmostachya bipinnata, Heteropogon contortus, T. quadrivalvis, Themeda triandra, Vetiveria zizanioides are found in Nashik District. Steps may be taken to promote its regeneration of these species by sowing its seeds.

CHAPTER-XIV
WORKING PLAN FOR MISCELLANEOUS WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

21.1.1 This Working Circle consists of forest areas which are not under any scientific management. The total area allotted to this working circle is 14123.749 ha. which is 11.36 percent of the total forest area of the Division. Following categories of forest area have been allotted to this working circle.

1. Forest areas which have been diverted under section 2 of Forest Conservation Act 1980, for various developmental activities.
2. Forest area under residential colonies, forest offices, forest depots and nurseries.
3. The forest area which is under encroachment, but its mutations entries have been made in the names of private people by the Revenue department &72-78, Eksali plot. However, records of Forest Department show that it is as forest area.

The detail of the forest area under above categories is given in the following tables.

Categories of forest area under miscellaneous working circle

Table

Sr.No.	Type of Forest Area	Area
1	Area diverted under FCA1980	489.043
2	Area under residences, offices, depots and nurseries	64.910
3	Transferred to Revenue Deptt.,& distribution area, 72-78 & Eksali	9164.910
4	FRA (Forest Right Act 2006)	4404.886
Grand Total		14123.749

Range wise distribution of area

Table

Sr.No.	Range	Total area of range	Area allotted to WC	Percentage
1	Umberthan	12304.890	1685.081	13.69 %
2	Surgana	13733.579	1236.228	9.00 %
3	Kanashi	13516.465	2030.878	15.03 %
4	Kalwan	15733.402	1796.048	11.42 %
5	Deola	9631.794	777.432	8.07 %
6	Dindori	10133.712	514.595	5.08 %
7	Chandwad	10262.714	1129.879	11.01 %
8	Nandgaon	27056.912	3960.410	14.64 %
9	Yeola	11988.509	987.668	8.23 %
Grand Total		124371.977	14123.749	11.36 %

SECTION 2: GENERAL CHARACTERS OF VEGETATION

21.2.1 The area of category (1) has been diverted under FCA 1980 and is being used for various developmental activities. The area of category (2) is being used by the Forest Department for various purposes such as residential colonies, forest depots, nurseries and forest offices. The area of category (3) is under cultivation or is being used for various other purposes. The mutation entries of this area have been made in favour of private people but this area is still a reserved or protected forest as per the records of the Forest Department .There is a need to settle this dispute of titles with the Revenue Department.

SECTION 3: METHOD OF TREATMENT

21.3.1 The area diverted under FCA 1980 needs no treatment. But its record should be maintained properly and the regular monitoring of conditions of diversion of the forest land shall be done. This may include a regular visit to that area to confirm that the forest land divested remains under that specified use, for what it was divested. The areas of category (2) are already with the Forest Department and need to be demarcated and fenced to avoid any possible encroachment in future. The area of category (3) is a forest area as per the record of Forest Department. However, the record of rights i.e. 7/12 extract, of this area has been issued in names of private people. The DCF East Nashik shall take up the matter with the Revenue Department and get the mutation entries changed in favour of the Forest Department. Most of these areas have also not been claimed by encroachers under the provisions of 'The Scheduled Tribes and Other Traditional Forest Dwellers Act' 2006.

CHAPTER-XV

WORKING PLAN FOR WILD LIFE (OVERLAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

14.1.1 This working circle covers the entire area of the division. It is an overlapping working circle. Therefore its recommendations will be in addition to the prescriptions of other working circles.

SECTION 2: STATUS OF WILDLIFE IN DIVISION

14.2.1 NANDUR MADHMESHWAR BIRD SANCTUARY: In the jurisdiction of this division, Nandur Madhmeshwer bird sanctuary is situated covering an area of 100.27 square kilometers. It is located in Niphad taluka and is managed by the Wild Life wing of the Forest Department. A number of local and migratory birds visit this sanctuary every year.

14.2.2 BORGHAD CONSERVATION RESERVE: The Government of Maharashtra vide its notification NoWLP.10-07/CR.255/F-1.dated 5th March 2008 had declared a biodiversity rich area in Comptt. No.622 of Dindori Range as Borghad Conservation Reserve covering a reserved forest of 349.277 ha., as per the provision of section -36 of Wild life Protection Act 1972.The main objects of this Borghad Conservation Reserve are as follows.

1. To undertake participatory measures to protect the ecologically sensitive area
2. To protect the landscape by putting an end to any further damage.
3. To restore the original composition of existing habitat.
4. To undertake soil and water conservation works.
5. To protect and develop the wildlife and its habitats.
6. To undertake the ecological study of bio-diversity.

14.2.3 Certain areas in Chandwad range which are the nesting and resting places of Vultures, may be considered for declaring a Vulture Sanctuary. Wildlife wing of Forest Department should do a survey of such areas and identify the compartment numbers in Chandwad range suitable to declare such areas as Vulture Sanctuary as per the relevant provision of Wild life Protection Act 1972. Such a step will be conducive for the protection of habitat of Vultures.

14.2.4 STATISTICS OF WILD ANIMALS: The census of wild animals was conducted in this division in the year 2005. The estimation of major animals as per this census is given below

Table.

Sr.No.	Name of wild animal	No. of animal found
1	Panther (Panthera pardus)	11
2	Jackal (Canis aureus)	29
3	Hyena (Hyaena hyeana)	21
4	Wolf (canis lapus)	115
5	Black buck (Antilope cervicapra)	849
6	Barking deer (Muntiacus muntijak)	192
7	Wild Boar(Sus serofa)	86
8	Chinkara (Gazella gazelle)	100

In addition to these fauna , Great Indian Bustard has also been located in Ozhar grassland of this division, but there number is very few and has not been sighted also for sometime . White back and long billed vultures are also found in the division, but are localised in Chandwad range Jungle Cat, rusty spotted cat, palm civet, Indian common civet, pangolin, porcupine, monitor lizard, crocodiles, Indian soft shell turtle etc are also reported to be found in the division, though these have not been spotted by the staff during wild life estimation. The lesser floricans have also been reported . The few of the fauna found here is shown in Appendix.II.VIII.1

SECTION 3: CONDITION OF HABITAT

14.3.1 The forests of this area belong to southern tropical dry deciduous, southern tropical moist deciduous and southern tropical thorn forest categories. All these form a very good natural habitat for the varieties of wild animals. But over the years, uncontrolled illicit cutting, encroachments, frequent forest fires, tahal cutting practice and heavy unauthorized grazing have led to the deterioration of their habitat. In general, the forests have got opened up and the effective forest cover has reduced considerably. This has also resulted in drying up of small ponds and streams in the forest and is causing a paucity of water particularly during hot summer months. All these factors are putting a tremendous pressure on the existence of wild life. During summers, animals are moving out of the forest area and are entering into the adjoining agricultural fields and human habitations. Many areas of grass lands have been encroached upon which is causing a major threat to grass land birds particularly Great Indian Bustard.

SECTION 4: MAN- ANIMAL CONFLICT

14.4.1 The degradation of wild life habitat has led to its conflict with the surrounding settlements. Every year, a number of domestic animals have been killed. Most of these animals have been killed by panther. However, a small number of kill cases by other wild animals have also been detected. The year wise detail of domestic animals killed by wild life and the compensation paid for it is given below.

Domestic animals kill cases

Table

Financial Year	No. of domestic animals Killed	Compensation paid (Rs.)
2005-06	84	131350
2006-07	75	148950
2007-08	33	64050
2008-09	164	274350
2009-10	36	69299
2010-11	25	66625

Similarly, several human beings have been injured or killed by wild animals. This shows the poor habitat condition due to which wild animals are coming out of forest area and attacking the human beings. The year wise detail of such cases is given below.

Human death and injury cases

Table

Financial Year	Total Cases	No. of Deaths	No. of injured	Compensation Paid(Rs)
2005-06	1	1	0	200000
2006-07	7	2	5	480000
2007-08	6	2	4	428000
2008-09	6	1	5	235750
2009-10	16	2	14	504500
2010-11	0	0	0	0

The Government of Maharashtra vide Revenue and Forest Department Resolutions No.WLP-1002/PK-258/F-1 dt.17/01/2003, WLP-1002/PK 258/F-1 dt. 20-05-2003 and

WLP-1008/PK 270/F-1 dt. 02/07/2010 have made important provisions for the compensation to be given in the event of death or permanent disability of human being irrespective of his or her age due to attack by Carnivores like Tiger, Panther, Bison, Wild boar, Wolf etc. Such compensation would be admissible to next of his kin. Detailed provisions have been given in the latest Govt. Resolution dt.02/07/2010. Copies of these important Govt. Resolutions have been appended in Volume II of DWP of East Nashik Forest Division.

SECTION 5: WILD LIFE OFFENCE CASES

14.5.1 Several wild animals have been found dead in the division during past few years, and most of these deaths have been reported as natural deaths by the staff of East Nashik Division. Similarly, some animals have died due to accidental death. The detail of animals died due to accidental deaths during last five years is given below.

Accidental deaths of wild animals

Table

Name of animal	2006-07	2007-08	2008-09	2009-10	2010-11	Total deaths
Panther	2	3	1	1	0	7
Black buck	7	12	11	5	0	35
Hyena	0	0	2	0	1	3
Chinkara	1	1	0	0	0	2
Chital	0	0	1	3	0	4

In addition to this, three blackbucks were killed by poachers, during the last five years. Poaching of birds has also been reported in some cases.

SECTION 6: SPECIAL OBJECTS OF MANAGEMENT

1. To conserve and improve the habitat of wild life
2. To monitor the status and provide protection to rare, endangered and endemic fauna and flora.
3. To reduce the man-animal conflict.
4. To create awareness among the local masses and involve them in the cause of wild life protection.

SECTION 7: METHOD OF TREATMENT:

14.7.1 INVENTORY PREPARATION: There are several rare, endangered and endemic floral and faunal species in this area. The field staff concentrates mainly on big animals during regular wild life census. But in this process, many small animals were left unnoticed. However, they are highly endangered and need utmost attention. Similarly, several rare and endemic plants locations are not given due attention. Many old forts and rock plateaus are the hot spots of many rare plants particularly in western ghat areas. These plateau areas look barren for most of the months. However, very rare and endangered plants grow there during rainy season for a short period. In order to provide any effective protection, it is very essential that all these rare and endangered animals and plants should be brought on record with their locations. Study of a small area has been done around Saptashingad , where a MPCA exists , but this study is needed to enlarge to the larger area . Therefore, field staff will find out the locations, particularly, during rainy season , where these highly endangered plant species are located as their existence is only ephemeral . All the barren and rocky areas shall be surveyed as these are the hot spots for such plant species. Similarly, a data base will be prepared for lesser known wild life species such as rare insects and butterflies also. This data will be updated every year and maintained at the range level with a copy to the divisional office. A scheme for conservation and protection of these areas shall be prepared and their status will be monitored regularly.

14.7.2 HABITAT IMPROVEMENT: Adequate and safe habitat is most essential for conservation of wild life. Therefore, to develop the ideal habitat for wild life, following measures are recommended.

1. Water is vital element for survival and flourishing of wildlife. All the water sources in the division shall be marked on the map. Their distribution and period of water retention will be studied every year. The new water holes will be created in the areas where there is shortage of water. As per the norms of Wildlife wing, one water hole needs to be created for every five square km. area of forests. New check dams and van talao will be made in such areas. The existing water holes will be strengthened so that water remains available for wild animals through out the year. Some of the seasonal water sources may be deepened so that water becomes available in them during summer season also. Suitable water conservation measures such as nalla bunding, contour trenches and check dams will be taken up in catchment of perennial water sources in order to augment the supply of water.

2. No felling of trees and bushes will be carried out around the water sources and along the paths frequently used by wild animals. Some of the fodder and fruit trees will be planted particularly in the vicinity of water sources at the time of various plantation schemes.

3. Some of the blank patches existing in otherwise well stocked forest may be retained as such. These spots are frequently used by the animals. Any interference without observing the habitat use pattern of wild animals may disturb it.

4. At least two dead trees per hectare, preferably of low economic value, will be retained in each coupe for the resting and nesting of the wild life. In addition to it, some unsound and hollow logs of commercially low value species will be left in the forest undisturbed in each coupe for providing shelter to the wild life.

5. Suitable SMC works will be undertaken in the areas having preponderance of wildlife. In Nandgaon and Yeola talukas which are rich in population of blackbucks, staggered contour trenches shall be undertaken and its loose soil will be planted with seeds of palatable grasses. This will act as source of green fodder and prevent the soil erosion along with retention of rain water.

6. A Temporary animal rescue Centre of preferably 0.5 ha area at suitable place in Reserved Forests needs to be developed for the protection of injured wild animals like deer, antelope so that the injured animals must get a feel of appropriate environment comprising of trees, bushes and grass. The injured animals would be kept for few days there and would be treated medically if needed. After few days, when they are fully recovered from their injuries, they shall be translocated in suitable forest areas. The Vivarium should be enclosed with chain link fencing.

7. Pollarding of foliage giving species like Acacia catechu, Acacia leucophloea, Acacia nilotica, Acacia senegal, Anogeissus latifolia, Azardirachta indica, Bauhinia racemosa, Boswellia serrata, Dalbergia latifolia, Dalbergia sissoo, P. juliflora etc.is also recommended in the forest areas where population of black buck, antilopes is in abundance so that they can get enough food there to eat. Only 30% of these plant species of girth class 10 to 30 cm will be pollarded at 1.25 meters from the ground .

14.7.3 MINIMIZING MAN-ANIMAL CONFLICT: The man-animal conflict can be minimized by sensitizing the people living around the forest area. The compensation for any damage to crop, domestic animals and human being should be paid as early as possible. There should be facilities for trapping and translocation of wild animals at each range which is sensitive for such conflicts.

14.7.4 RAJAPUR AND MAMDAPUR AREA MANAGEMENT: These forest areas , which fall in the jurisdiction of Yeola range of this division , are very rich in wildlife. There

is rich population of Black buck, Chinkara and Wolf in this area , which is spreading to the adjoining Nandgaon range also. But this area faces shortage of water particularly during summer months. Therefore, suitable sites for vantalao will be selected in this area and these will be made in phased manner after getting permission from competent authority. Similarly, small cement tanks will be constructed and water will be released into them with the help of tankers during summer months. Salt licks will be provided near the source of water. Unauthorized sheep grazing will be strictly controlled to keep the habitat safe for these animals. In the plantation programme, anjan (Hardwickia binata) seedlings will be planted in a large scale in this area in order to provide fodder to herbivorous animals. Steps should be taken by East Nashik Forest Division to declare these areas Conservation Reserve.

14.7.5 WETLANDS MANGEMENT: Nandur-Madhmeshwar wild life sanctuary is visited by hundreds of migratory birds every year. There are many small wet bodies around this sanctuary , which lie on the migratory route of these birds. These wet bodies form the support base for these birds. Therefore all such water bodies should be properly protected by the Department , in order to avoid any disturbance in their migratory route.

14.7.6 MANAGEMENT OF GRASSLANDS: There are many grass lands in this division particularly in Dindori, Yeola, Chandwad and Nandgaon ranges. These grass lands are the potential habitat of numerous grass land birds such as stone curlews, Indian courser, larks, babblers, munias, falcons, partridges, quails etc. But these grasslands are inflicted with the problem of illegal grazing, burning, encroachments etc. There are lot of human and cattle disturbance in these areas during their breeding season. Therefore, these problems must be controlled in order to provide a safe habitat for avifauna.

14.7.7 PROTECTION OF GIB: The most favoured habitat for Great Indian Bustard in this Division are Ojhar (HAL)-Dindori- Wani grasslands, Mhasrule-Jaulke-Pimpri (DRDO) grasslands and Yoela-Vinchur-Chandwad-Manmad grasslands. Birds have been found breeding in Ojhar area of HAL , which is mostly the defence area , but the surrounding areas are also the potential habitat where their migration is possible.Therefore, some grassland areas should be kept intact for their breeding from March to June months, because GIB needs grasses up to their neck height for safe breeding. The field staff must keep a close watch in these areas for the population of GIB and their protection. Villagers also should be educated regarding the presence of these birds and their importance in the niche .

14.7.8 PROTECTION OF OTHER GRASSLAND BIRDS

The following grassland birds prefer tall grass for nesting camouflage and feeding. Lesser florican, Grey partridge, Painted partridge, Jungle bush quail, Common bustard

quail, Rain quail. These birds make their nests on ground under the cover of tall grass and most of these birds have precocial chicks as a result they spend more brooding rather than the tree nesting birds and hence it is vital to protect the grassland habitat.

The following birds prefer short/ grazed grass for nesting :

Stone curlew, Indian curser, Yellow Wattled Lapwing, Red wattled Lapwing .

Black bellied finch lark, Rufus tailed lark, Syke's crested lark and Malabar crested lark etc nest on ground around a clump of grass.

At the time of their hatching, chicks range in development from helpless to independent, depending on their species . Helpless chicks are termed altricial and tend to be born small, blind and immobile. Chicks that are mobile and feathered upon hatching are termed precocial. Altricial chicks need help such as thermoregulating and must be brooded for longer than precocial chicks. Chicks at neither of these extremes can be semi-precocial or semi-altricial. It is very important that during breeding seasons of these birds, measures should be taken by concerned territorial field staff to ensure complete protection to the areas against fire where breeding takes place. If necessary, additional staff including watchmen should be deployed in these breeding areas. Information regarding breeding seasons of the grassland birds is given in the following table.

Name of Birds	Breeding season
Great Indian Bustard	March to September
Lesser florican	July to September
Grey partridge	May to July
Painted partridge	April to September
Jungle bush quail	December to May
Common bustard quail	April to July
Rain quail	March to October
Stone curlew	April to August
Indian curser	February to June
Yellow Wattled Lapwing	March to May
Red Wattled Lapwing	October to February
Black bellied finch lark	February to September
Rufus tailed lark	February to May
Syke's crested lark	June to August
Malabar crested lark	June to August

14.7.9 PROTECTION OF VULTURES: Long billed vultures are rock dwelling birds. Their large colonies are located in Chandwad, Yeola and Nandgaon ranges. They breed inside the crevices of rocks. The reconnaissance, observations and study under taken by forest official and BNHS & Nature Conservation Society Nashik have revealed many pockets of vultures in East Nashik Division. Some of the potential areas of these vultures are Chandwad, Rajedharwadi and Indraiwadi forts in Chandwad range. They have also been located in Dhodap fort near Shaptshringi temple in Kalwan range. The habitat of this vulture must be watched and protected properly.

Similarly White back Vultures are tree nesting birds. They have also been spotted in Surgana, Kanashi and Kalwan ranges. Their potential sites are deep valleys with tall trees such as teak, haldu, semal etc.Their nesting sites must be monitored and protected properly. The dry trees with their nests should not be felled during silvicultural operations.

Whenever during field trip if vulture flock feeding on cattle carcasses it needs to be examined by counting number of individuals species wise and such incidences should be reported to the division office.

Normally the breeding season of vultures starts from October, November to February so every month such places must be visited and observations to be noted in prescribed form particularly for tree nesting vultures. People need to be made aware about the importance of these species so that local people will join us for its protection. Such trees are to be marked and it needs to be protected where vultures do nest every year.

General awareness about banning the prescribed drug Diclofenac for cattle, with harmful chemicals needs to be done away. Dead bodies of cattle need to be dumped in proximity of vulture nesting places. Further, if any dead vulture is seen it should be reported to nearest Range office and necessary post mortem need to be undertaken with the assistance of a veterinary Doctor. There is a need to create a Vulture restaurant in Chandwad range, where the carcass of a cattle may be brought from Gowshala , and be kept there with body dissected . Before placing the carcass in the vulture restaurant , it needs to be assured that the animal was not treated with Diclofenac for the last seven days .It will be advantageous if the liver of the dead animal is carved out and dumped into soil .

14.7.10 WILD LIFE PROTECTION MEASURES:

1. The Wild life (Protection) Act 1972 as amended in 2003 and Maharashtra Wild life (Protection) rules 1975 will be implemented strictly in the whole area in order to prevent the incidences of poaching and hunting of wild animals.
2. Awareness must be created among the local communities through JFM programme regarding the existence and importance of rare, endangered and endemic fauna and flora. The Wild Life Week and World Forestry Day are the other occasions when villagers must be sensitized and mobilized for the cause of wild life protection.
3. Wild life posters and boards with paintings of endangered animals should be put up at strategic locations. The penal provisions of the Wildlife Protection Act should also be conveyed through posters in vernacular language.
4. Various schools must be regularly visited by the field staff. Wild life movies should be shown to students as electronic visual media has a long lasting impact. Various types of quizzes and competitions on the issue of wild life conservation may be conducted in schools.
5. Regular census of wild animals shall be conducted periodically to monitor their status. The results of census must be analyzed critically to study any drastic increase or decrease and movements of wild animals.
6. Compensation for killing of domestic cattle or attack on human being by wild animals must be made at the earliest possible time so as to not antagonize the local people.

CHAPTER-XVI

WORKING PLAN FOR JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

SECTION 1: INTRODUCTION.

15.1.1 The concept of participatory forest management was accepted in the National Forest Policy of 1988. As per the provisions of National Forest Policy, 1988, Government of India, vide letter No. 6.21/89-PP dated 1st June, 1990, outlined and conveyed to State Governments a framework for creating massive people's movement through the involvement of village committees for the protection, regeneration and development of degraded forestlands situated in the vicinity of villages. This gave birth to JFM. Guidelines were issued in 2000 and 2002 for further strengthening JFM. As per the guidelines of the Ministry of Environment & Forest, Government of India, New Delhi, issued vide circular dated 01.06.1990 the Government of Maharashtra issued a Government Resolution vide Revenue & Forest Department G. R. No. SLF-1091/C.No.119/91/F-11, Dt. 16.03.1992 for the implementation of Joint Forest Management Programme according to which certain guidelines were issued regarding Management of Forests, with the active involvement of the villagers. This programme was to be implemented with the assistance of local Gram Panchayat. Initially, under this programme degraded forests were required to be regenerated, responsibility to protect forest areas, maintenance of plantations, etc. were to be done through village level Forest Protection Committee. Under this programme, a micro plan for each village was required to be prepared which will give details about area of natural regeneration, scheme to increase the density of the forest, models of afforestation, choice of species, soil and moisture conservation works, demarcation of forest, etc. The period of the plan will be 10 years.

For the effective implementation of this programme, various committees have been formed. Also details about usufructs from the area to be managed by Forest Protection Committee have been specified in the Government Resolution. With the passage of time, the Joint Forest Management Programme evolved further and later Revenue and Forest Department of Government of Maharashtra issued Government Resolution No. Revenue & Forest ,G R. No. MSC/2000/C.No.143/F-2, Dt. 25.04.2003 & FDM 2011/C.No.100/F-2, Dt. 05.10.2011 for the implementation of Joint Forest Management Programme effectively at village Panchayat level by the Forest Department of Government of Maharashtra. In schedule areas, certain powers have been given to Gram Panchayat e.g. propriety / ownership of 33 items of forest produce (Non-Timber Forest Produce) will be with Gram

Panchayat. Collection of these forest produce will be done through village level. Forest Protection Committee for a period of 10 years and above if authorized by village Panchayat. Under Joint Forest Management Programme village Panchayat has to play important role to enable Forest Protection Committee for better management of forest areas.It has been accepted that involvement of local communities is essential in the management of forest and to get rid of the forest from the perennial problems of illicit cutting, unauthorized grazing, recurrent forest fires, encroachment etc. It has also been conceded that local stake holders will be rewarded at various stages of harvesting of forest in lieu of their contribution towards protection and management of forest. It has been envisaged that the contribution of local stake holders will benefit the forest in its protection and management.

SECTION 2: GENERAL CONSTITUTION

15.2.1 This is an overlapping working circle and extends to the whole area of the division. There are nine ranges in this division. The forest protection committees have been formed in all the ranges and the scheme is being implemented under various programmes.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

1. To protect and conserve the existing forest with active involvement of local stake holders.
2. To empower the local communities for perpetual and sustainable management of the forest.
3. To integrate the forest management with other developmental activities in the villages situated in and around the forest areas.
4. To reward the villagers for their contribution in protection and management of forest.

SECTION4: STATUS OF JFM IN DIVISION

15.4.1 The participatory forest management was started in the division with World Bank funded Maharashtra Forestry Project. Subsequently, the scheme was continued under central sponsored project of FDA (Forest Development Agency). Several villages have been covered under participatory forest management in the division since then. The range wise detail of the villages covered under the scheme is given below.

Villages under participatory forest management

Sr.No.	Range	Total Villages	Villages with FPC	villages under JFM+FDA	Villages Under JFM	Villages under FDA	Plantations taken up (ha)
1	Dindori	67	19	2	1	1	55.00
2	Kalwan	70	61	32	5	27	1355.00
3	Deola	29	28	8	8	0	240.00
4	Chandwad	43	20	2	0	2	50.00
5	Nandgaon	56	40	1	0	1	25.00
6	Yeola	64	38	2	2	0	55.00
7	Kanashi	64	39	28	2	26	1151.00
8	Surgana	46	33	0	0	0	0
9	Umbarthan	25	15	O	0	0	0
Total		**464**	**293**	**75**	**18**	**57**	**2931**

There are 464 villages in the division having forest area. Out of this, the 'Forest Protection Committees' have been formed in 293 villages. Approximately 63 percent villages have been covered under participatory management of forest. However, the formal scheme of JFM under the World Bank aided project was taken up in 18 villages and 57 villages have been covered under central sponsored scheme of FDA. In all these villages, total 2931 hectares of plantation have been taken.

15.4.2 Evaluation of Scheme: The joint forest management scheme has satisfactory results in the division. CCF Nashik has got all the committees evaluated at circle level. The evaluation of the villages was done on the basis of Sant Tukaram Vangram Yojna. The committees getting more than 60 points out of 100 were evaluated as 'Good Committees' whereas the committees getting between 35-60 points were adjudged as 'Average Committees'. The committees that got less than 35 points, it was decided that these are eligible for cancellation of registration. The classification of these villages is given below.

Circle level evaluation of villages

Total FPCs in division	Classification of Forest Protection Committees		
	Good Committees	Average Committees	Fit for cancellation of registration
293	135	125	33

15.4.3 Sant Tukaram Vangram Yojna: Every year, the villages are evaluated under Sant Tukaram Vangram Yojna in the division at district and state level. Each village is evaluated on various parameters of participatory management. They are given points out of 100 based on the performance of the scheme. Several villages from the division have got award at

district and state level which shows that the scheme is performing well in the division. The detail of the villages that got recognition at district and state level is given below.

Performance of villages under Sant Tukaram Vangram Yojna

Sr.No.	year	Range	Village	Award and level		Amount
1	2006-07	Deola	Kapshi	Second	District	15000
2	2007-08	Chandwad	Paregaon	First	District	25000
3	2007-08	Chandwad	Paregaon	Second	State	250000
4	2007-08	Kalwan	Vanjari	Third	District	7500
5	2009-10	Kanashi	Mohebari	First	District	51000
6	2010-11	Kanashi	Bhaitane	Third	District	5500

15.4.4 Survival Percentage of JFM and FDA Plantations: East Nashik Division has counted the survival percentage of JFM and FDA plantation of last five years in the month of May 2011. These plantations have been taken under various heads. Their survival percentage is as given below.

Survival Percentage

Sr. No.	Name of Scheme	Year of Plantation	Area of plantations(ha)	Survival percentage
1	Artificial Regeneration	2008	225	56.88
2	Artificial Regeneration	2009	275	72.82
3	Natural Regeneration	2008	450	65.53
4	Natural Regeneration	2009	550	75.69
5	Bamboo Plantations	2008	250	67.44
6	Bamboo Plantations	2009	250	73.76
7	Medicinal Plants	2009	192.50	73.93
8	Medicinal Plants	2010	7.50	90.47
9	JFM (State)	2007	90	58.52
10	JFM (State)	2009	90	47.70
11	JFM (State)	2010	60	90.65
12	JFM(District) Non-Tribal	2007	110	71.36
13	JFM (District) Tribal	2007	100	60.22
14	JFM (District) Tribal	2010	86	86.58

SECTION 5: METHOD OF TREATMENT

15.5.1 Human Resource Development:

The cutting edge in success of JFM is the field staff of forest department, prominent leadership in the village and local non government agencies operating in the area. They need to be sensitized regarding the concept of participatory forest management. Initially, short orientation progammes shall be conducted for the field staff. They should be trained in communication skills and other relevant concepts of the scheme. Once, they are fully convinced, the local leadership comprising of various social groups shall be taken into

confidence. They shall be taken to the places of success stories. The various benefits from the scheme such as sharing of usufructs, intermediary harvesting and the concept of self help groups should be discussed with them. Regular meetings shall be taken up in the villages involving all the social groups before the scheme is officially launched. Various aspects of the programme shall be explained to them and their doubts shall be cleared. The reputed NGOs operating in the area shall also be involved in mobilizing and generating the confidence among the villagers.

15.5.2 Constitution of Forest Protection Committees:

Once the amicable rapport is developed and awareness is created in the village, a formal forest protection committee will be constituted in the village as per the order of the government. . Regular meetings of the committee shall be conducted and a proper record of it will be maintained. The forest area allotted to the committee will be delineated properly and a memorandum of understanding will be signed. The committee will be registered as per the provisions of the Maharashtra Society Registration Act 1860. The specialized committees such as agricultural committee, animal husbandry committee, education committee, alternative sources of fuel committee etc. can also formed headed by a member of forest protection committee. These committees will look after the possibilities and resources of development in their specialized area under the over all guidance of main committee.

15.5.3 Micro planning:

A separate micro plan will be prepared for each village covered under this scheme. The document will be prepared in vernacular language. It will contain all the essential information such as forest are, revenue land, human and cattle population and socio economic profile of the village. The treatment to be given to the forest will be discussed with the villagers and then it will be finalized. However, it should be kept in mind that the treatment prescribed should not be at variance with the prescription of working plan. The mechanism of protection and sustainable management of forest will be incorporated in the plan.

The local requirement of people such as grazing, fuel wood and small timber will also be considered while finalizing the treatment to be given to the forest. However, the provision will be made to reduce the pressure on forest through introduction of energy saving devices such as solar cookers, improved chullas etc. Unauthorized grazing is a big menace for natural regeneration in the forest area. Therefore provision will be made in the

plan to reduce it gradually in phases. The concept on cutting the grass and stall feeding should be introduced in a phased manner. The scheme of reducing the unproductive cattle and introduction of superior quality animals shall be introduced.

The whole forest area will be surveyed properly and provision will be made for suitable soil and moisture conservation works to augment the supply of water for drinking and agriculture. Similarly, a list of all the usufructs available along with their probable quantity will be prepared and included in the plan. The mechanism of usufruct and intermediate harvests sharing will also be spelt out clearly in the plan. The processing, value addition and marketing of various NTFPs will deliberated and incorporated in the plan.

One of the most important component of the scheme is entry point activity. The villagers should have elaborate deliberation on this issue. Preferably, this amount should be planned to be spent on activities which can generate perpetual income for the village in future. The basic needs of the villagers such as water, agriculture, transportation, education and health facilities should not be ignored in the plan. The line departments should be asked to implement these schemes as per the genuine requirement of the people.

15.5.4 Implementation:

The scheme shall be implemented strictly as per the planning. Regular meetings will be conducted in the village by forester and guard regarding implementation of scheme. RFO will also attend some of the meetings of FPC. Review of all the components of the scheme will be taken in these meetings. DCF shall also review the progress every month. He should conduct the meeting of the line departments also quarterly. The progress of their work shall be reviewed by the DCF. Elected representatives of the district and officers from other departments should be invited to the village to boost their morale.

15.5.5 Self Help Groups:

The concept of self help groups must be introduced in every village of JFM. The self help groups of both men and women should be prepared. It will help in mobilizing the whole village and inculcate the habit of saving in them. The establishment of cottage industries with the help of SHG money and bank loans should be introduced in the villages. Government is providing loan to these groups at highly subsidized rate. There fore, it can revolutionize the rural society. These groups may be assigned the work of maintaining

forest nurseries , forest seed collection , the work of fire tracing etc. The group can also be utilized for plantation weeding and other related activities .

15.5.6 Monitoring and Evaluation:

Monitoring of the scheme is very essential to keep a check that it is proceeding as per the planning. All the parameters such as forest protection, plantation activities, employment opportunities in village, improvement in family income and all other related components will be monitored annually. Any corrective measure will be taken immediately. A detailed evaluation will be conducted at the end of the scheme in every village. Its results will be analyzed and compared with targets set up initially. The lessons learnt from one village will be applied in the other surrounding villages.

CHAPTER-XVII

WORKING PLAN FOR FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

16.1.1. This working circle extends to entire divisional area comprising of reserve forest, protected forest and unclassed forest. Some of the reserve forests are having very good crop and valuable timber species. These forests have become the target of illicit felling from across the state boundary. The protected forests are lying adjoining to the villages. Therefore, they are seriously inflicted with the problem of tahal cutting, encroachments and unauthorized grazing. These problems need to be addressed urgently; otherwise, the scientific interventions may not yield the expected results.

SECTION 2: SPECIAL OBJECTS OF MANAGEMENT

1. To protect the existing flora and fauna
2. To save the valuable forest land from encroachments.
3. To sensitize and involve the local communities in the cause of protection of natural wealth.

SECTION 3: STATUS OF FOREST PROTECTION

16.3.1 Presently, the forest is suffering from various problems such as illicit felling, unauthorized grazing, encroachments, forest fires etc. These maladies are playing havoc with the forest crop. The intensity of these problems along with the number of offence cases booked is given below.

16.3.2 Illicit Felling: The area is having very good forest crop and valuable timber species particularly in Umbarthan, Surgana and Kalwan ranges. But it is highly prone to illicit felling. This has led to heavy depletion of valuable commercial species in the area. Similarly, most of the trees adjoining the agricultural fields are lopped for rab burning. It severely hampers their photosynthetic activity and overall growth. The damage is more serious in protected forest which is usually adjoining to villages. The summary of the loss due to illicit felling in last few years is given below.

Summary of illicit felling

Year	No. of trees illicitly felled		Loss due to illicit felling (Lakhs)		
	Teak	Non-Teak	Teak	Non-Teak	Total
2002-03	1600	3039	71.90	20.43	92.33
2003-04	1303	3638	54.13	6.13	60.27
2004-05	696	2246	23.27	11.13	34.40
2005-06	643	3601	19.32	2.82	22.14
2006-07	270	2353	9.81	11.60	21.41
2007-08	215	826	6.38	1.27	7.65
2008-09	630	732	15.15	0.76	15.92
2009-10	333	260	23.22	0.21	23.43
2010-11	270	308	3.70	3.72	7.42

16.3.3 Encroachment, Grazing and Forest Fires: The division is having severe problem of encroachment on forest land. This encroachment is mainly for agricultural purpose. People living adjoining to forest area clear small patches of forest land in the summer months. They broadcast the seeds in the cleared area on the onset of monsoon. In this manner, they keep on increasing the area of their encroachment. The Tribal development department in association with Forest department is finalizing the cases of eligible encroachers as per the Forest right Act. The total area under encroachment in the division is 2200.8257 ha upto 2011-12 (upto Nov)

16.3.3

Similarly, the whole area of the division is inflicted with unregulated grazing. Usually, people living in and around forest set the animals free for grazing in the forest after rainy season. This unregulated grazing damages the young regeneration and tramples the small seedlings.

In addition to this, these forests are very susceptible to forest fires in the months of summer. Villagers set the fire in the forest usually for clearing the site, encroachments, collection of certain non timber forest produce, clearing of paths frequently used by them, hunting of wild animals etc. Sometime, the fire set for rab burning also spreads and causes forest fires. The fires in all these cases, severely damage the natural regeneration and humus contents of soil. The position of offence cases of encroachment, grazing and forest fires occurred during last five years is given in the following table.

Summary of offence cases

Type of Offence	Year of Offence					
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Encroachment	98	60	30	91	19	22
Grazing	128	120	70	49	51	62
Forest Fires	64	51	73	49	25	39

The cases of encroachment are being settled under the Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006. The district committee has finalized the claims of encroachments as per the provisions of the relevant act. However, some appeal cases are still pending and are in the process of finalization. Therefore, the area is subject to minor corrections. But it includes some small portion of West Nashik Division also. The forest area of East Nashik Division falls in six talukas. The detail of claims finalized by district committee is given below.

Summary of encroachment cases allowed

Sr. No.	Taluka	No. of claims approved by district committee	Forest area approved by district committee (ha)
1	Dindori	1936	1514.18
2	Kalwan	2728	1776.43
3	Surgana	6902	3476.42
4	Deola	72	121.32
5	Yeola	15	8.00
6	Niphad	173	45.50
Total		11826	6941.85

SECTION 4: METHOD OF TREATMENT

16.4.1 The forest protection in the division should involve multi pronged strategy to curb the maladies such as illicit felling, encroachments and unregulated grazing with which forest is inflicted. Mainly these strategies will be as follows.

1. **Strengthening of field staff in sensitive areas:** The entire forest area shall be divided into various categories based on its sensitivity. The parameters of sensitivity can be various such as illicit felling, encroachments, forest fires etc. The field staff should be strengthened in these highly sensitive areas. No post shall be left vacant in these areas. In hyper sensitive areas, the size of beat and round may be reduced to effectively protect the forest area. The staff of mobile squad will be given a special duty in such areas with specific targets. The unit shall be equipped with weapons and vehicles. They shall be given duty to patrol the hyper sensitive areas round the clock.

2. **Up gradation of Staff's Skills:** It is seen in the division that the field staff entrusted with the responsibility of forest protection are not fully aware of the provisions of law and its legal procedures. They lack the skill of forest offence investigation and its legal implications. Therefore, they should be regularly updated by the senior officers. Short time capsule courses on forest protection must be given to the field staff particularly posted in hyper sensitive areas. They should be trained regarding court cases as a good punishment from the competent court can create a long lasting impact in the surrounding areas.

Many times, it observed that offence cases are booked. But their investigations are not completed timely, due to which they lose their significance. Staff must be sensitized regarding the method and importance of investigation. A regular review should be taken at range and divisional level regarding the pending cases with field staff and quality of investigations of offence cases.

Usually, beats checking are carried out regularly. But their results are not analyzed critically. Any unusual illicit felling trends must be taken seriously and field staff should be deployed to check the menace immediately. If it gets ignored initially, it becomes a perpetual and rampant malady. Later on, it becomes extremely difficult to control. Senior officers should regularly verify these beat checking and guide the staff on the spot regarding preventive measures to be taken.

3. **Coordination with Police Department:** In order to prevent unlawful activities viz. removal of wood illegally from Forest, encroachment over forest land, kindling of forest fires, hunting and poaching of wild animals etc, it is seen that state Reserve Police unit which is attached to Forest Division, for enabling the forest officer to make raids or to take preventive action against unlawful activity, is not very useful as SRP

unit does not possess powers to arrest the person who indulges in unlawful activity. As such, it is suggested that DCF, East Nashik Forest Division should request the local police authorities to provide a unit of Regular Police personnel, who possess adequate power to arrest the person who indulges in unlawful activity in the forest areas. These powers are exercised by police personnel as per the provisions of the Bombay Police Act, 1951.

4. **Coordination with other Departments:** Forest protection can be strengthened reasonably with good coordination with other departments such as police and revenue departments. There is a provision in the section 79 of Indian Forest Act 1927 that every person who receives any emoluments from government is bound to help the forest officer in forest protection. Police Patil, Gram Sevak, Sarpanch and Talathi are the village level functionaries who have a lot of clout over village. They command high respect in the village and generally, they are not defied by villagers. Therefore, their services must be roped in the cause of forest protection.

1. **Involvement of village community:** A large number of forest protection committees have been formed in the division. These committees must be actively mobilized and involved in the cause of forest protection. They have the potential to curb this malady at local level. The system of rewards should also be used to motivate them .A spirit of competition may be introduced among various villages to protect the areas allotted to them under JFM.

2. **Control on encroachments:** The problem of encroachments on forest land has got increased tremendously in last few years. After the Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 came into existence, villagers have got the impression in their minds that new encroachments would also be regularized in future. So the legal encroachments of the people as per this act should be regularized as early as possible .There after, a special scheme should be prepared to evict the illegal encroachments.

Further, it is suggested that DCF, East Nashik Forest Division, should submit a proposal through proper channel to Govt. of Maharashtra to obtain necessary orders enabling him to exercise power to evict the encroachments of forest lands similar to the power exercised by Collector under Article 242 of Maharashtra Land Revenue Code, 1966. Under Article 242 of MLRC, 1966, Collector can proceed to evict any person wrongfully having possession of Govt. land. Collector has powers to issue warrant for the arrest of person wrongfully in possession of land. If such powers are given to DCF, it will have a deterrent affect on the encroachers of forest land.

3. **Forest fires:** It is essential to protect the forest from fires which causes immense damage to young crop, regeneration, fauna and flora. Adequate preventive measures should be taken before the fire season. The first step is to create awareness in the surrounding area regarding the loss due to forest fires. Suitable pamphlets may be printed before the fire season and distributed in the villages. Forest Protection Committee's meeting must deliberate on this issue in detail and take review of the forest area burnt in the past. Committee must entrust the specific responsibility to see that no fire takes place. Further as a preventive measure, watch towers may be erected in most sensitive and fire prone areas. These towers must be manned round the clock and equipped with wireless sets and mobile phones also in fire season.

Once the fire season starts, early detection of forest fire is very important. If it is detected in early stage, suitable preventive measures can be taken and it can be extinguished. Whenever, fire is detected in the field by any staff irrespective of jurisdiction, it shall be flashed to all the concerned employees starting from Forest Guard to DCF. The help of nearby villagers shall be sought by the person reaching first on the spot and all efforts will be made to extinguish it. Field staff will not leave the spot unless it is completely extinguished. The forest will be classified in following categories for effective fire protection.

Class I : Forests Completely Protected; The following categories of areas will be included in it.

1. All the new plantations areas.
2. Entire area allotted to protection working circle.
3. All the forest areas adjoining to wildlife sanctuary.
4. Timber depots.
5. All the coupes areas up to a period of 10 years till the young crop establishes well.
6. Any other areas of special importance and ordered by CCF, Nashik.

All these areas will be fire protected by means of external fire lines. The areas will be divided in to convenient blocks of interior fire lines also. The fire watchers will be deployed to protect these areas during fire season.

Class II: Forests Generally Protected: All these areas will be protected by external fire lines. This category will include the following areas.

1. Old plantation management working circle areas.
2. Any other area ordered by CCF, Nashik.

Class III : Forests Protected by Law Only : All the forest areas not included in above two classes will be included in this class. The following measures will be taken for protection of this area.

1. The external boundary of the reserve forest up to 12 meters width will be cut and burnt under control before the fire season.
2. On both side of the roads a 6 meter width fire lines will be cleaned and control burnt.

Guidelines to reduce the incidence of forest fires:

1. The fire lines cutting will be completed by end of December and burning it under control will be finished by mid February.
2. The fire watchers will prevent carrying and kindling of any fire in the forest area. They will also keep all the fire lines completely free of combustible material. On detecting the forest fires, fire watchers will immediately inform the beat guard. They will extinguish the fire as soon as it is detected with the help of local people.
3. RFO will immediately inform the DCF East Nashik regarding the out break of any forest fire in his range. He will submit a final report along with sketch of the area burnt to the DCF within 15 days of the incidence of the fire.

DCF East Nashik will submit a monthly return to CCF Nashik regarding the area burnt and the extent of damage caused by it. He will also inform regarding the cause of fire and the measures taken to extinguish it.

Grazing Control: The grazing policy has been formulated by Government of Maharashtra vide its Resolution No. MFP-1365/13221-Y, dated 6.12.1968 and the forest has been categorized in to various functional classes. Further to regulate the grazing, grazing rules have been framed by Government of Maharashtra vide its Resolution No. MFP/1371/237035-Z, dated 3.11.1973. The sheep grazing has been banned completely in this Division by Resolution No. MFP/2103/135/F-1 dated 6.5.2008. The grazing will be regulated as per the provisions of these orders of the Government. The protection working circle will be completely excluded from any type of grazing. However, a maximum grazing incidence of one cattle unit per 0.8 ha will be allowed in improvement working circle, afforestation working circle, kuran working circle and old plantation management working circle. But all the coupes will remain closed to grazing for a period of five years from the year of working.

CHAPTER-XVIII

WORKING PLAN FOR NON - TIMBER FOREST PRODUCE (OVER LAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

18.1.1 This is an overlapping working circle and covers entire area of division. Some of forest areas in the division are notified scheduled areas under Article of Constitution of India. The ownership rights in notified scheduled areas in respect of 33 items have been vested in village communities through 73rd Amendment of the Constitution. DCF, East Nashik Forest Division has been auctioning Tendu and Apta leaves every year through tenders at the state level. No other product of NTFP has been auctioned at the divisional level during the last five years.

SECTION 2 : IMPORTANT NTFP SPECIES

18.2.1 The enumeration of NTFP species has been carried out by SOFR unit Nashik in the year 2009-10. The prominent NTFP species along with their occurrence per hectare in order of preponderance is given below.

Table

Sr.No.	Species Name	No. of trees per hectare	User Part of the Plant
1	Dhawada	4.95	Gum
2	Babul	3.36	Gum
3	Palas	2.20	Lac, Flowers
4	Neem	2.03	Seeds, leaves
5	Moha	2.02	Flowers & Fruits, Seeds
6	Behda	1.19	Fruits
7	Amba	1.19	Fruits
8	Khair	0.99	Lac, Wood
9	Apta	0.89	Leaves
10	Kuda	0.6	Leaves
11	Kandol	0.47	Gum
12	Hirda	0.39	Fruits
13	Karanj	0.21	Seeds
14	Bor	0.21	Lac, Fruits

SECTION 3 : STATUS OF NTFP IN DIVISION

18.3.1 As mentioned in the foregoing paragraph, division is collecting tendu and apta by issuing tender at the state level. The figures of tendu and apta collection along with their revenue are given below.

Tendu and Apta Collection

Table

Sr.No.	Year Of Production	Tendu		Apta
		Std. Bags	Amount(Rs.)	Amount(Rs.)
1	2002-03	1116	55795	12222
2	2003-04	588.51	85555	12888
3	2004-05	0	0	12906
4	2005-06	0	0	14112
5	2006-07	0	0	14444
6	2007-08	600	101000	16666
7	2008-09	600	116130	17644
8	2009-10	600	150000	18648
9	2010-11	600	178800	20222

In addition to this, grass is another major product which used to be collected in the past. However, after formation of forest protection committees, it is now being disposed of by the committees. The production of grass along with the revenue realized from it in the past is given below.

GRASS PRODUCTION

Table

Sr.No.	Year	Quantity(MT)	Amount(Rs.)
1	2002-03	15	15150
2	2003-04	20	20650
3	2004-05	45	76400
4	2005-06	20	20650
5	2006-07	3	1800
6	2006-07	17	5500

SECTION 4 : SPECIAL OBJECTS OF MANAGEMENT

18.4.1

1. To identify and assess the NTFP resources in the division.
2. To promote their scientific harvesting.

3. To improve the quality and quantity of Non Timber Forest Produce.
4. To ensure their sustained yield in future.

5. To promote the density and abundance of medicinal plants through raising plantation in the forest area, which have found usage in ayurvedic and allopathic system of medicine.
6. To improve the socio - economic condition of the people and generate employment opportunities.

SECTION 5 : METHOD OF TREATMENT:

18.5.1

1. Resource Inventory :

It is very important to know the inventory of NTFPs in the division. A data bank of these resources shall be prepared at each range level. Field staff will collect the inventory data at the time of demarcation of the annual coupes and preparation of the treatment maps. This data will be updated every year and maintained in the range office. The field staff will collect data regarding the existence of all the important NTFP plants. They shall also gather the information regarding rare and endangered plants. This exercise will build up the up- to- date inventory data of all the NTFP resources.

18.5.2

2. Development of Medicinal Plants:

Promotion of Ayurvedic System of Medicine:-

Nearly 968 species have been identified to have medicinal value, according to the ancient available literatures, which has now being enlisted by FRLHT in their publication and out of which, 297 species have been found to occur in this area according to flora of Nashik District compiled by Botanical Survey of India. These medicinal plants are used in ayurvedic formulation as enlisted in Pharmacopoeia of India and few of such formulations is given below. In the present plan, the promotions of only few restricted species have been provided; which includes trees shrubs and herbs, as it will be impractical to propagate a large number of species, in absence of a definite knowledge about their nursery technique.

Table showing the plant species used in different Ayurvedic Formulation is as below:-

Table 1

Sr. No.	Plant Name	Latin Name	Local Name	Endengerous Spacies/ Demanding	Ayurvedic Formulation
1	Guduchi	Tinospora Cordifolia	Gulvel	Demanding	1. Amrutarishta 2. Amruta Tail 3.Amrutadi Loh 4.Kaishor Guggul

2	Patha	Cacculus Hirsutus	Pahad Vel	Demanding	1.Shaddharan 2.Gangadhar Churna 3.Kutajashtak Kwath
3	Darvi	Berberis Aristata	Daruharidra	Demanding	1.Rasanjan 2.Phaltrikadi Kwath 3.Mahamanjishtadi Kwath
4	Amalki	Ambelica Officinalis	Aavla	Demanding	1.Chawanprash 2.Triphala churna 3.Moravala
5	Chandan	Satalum Album	Chandan	Demanding	1.Chandanasav 2.Chandanadi Vati 3. Chandanadi Tail
6	Gambhari	Gmelina Arborea	Shivan	Demanding	1.Dashmulasav 2.Dashmularishta 3.Bruhatpanchamul Kwath
7	Bharngi	Clerodendrum Serratum	Bharangi	Demanding	1.Bharagyadi Kwath 2.Bharngiavleha
8	Agnimanth	Premna Mucronata	Takali	Demanding	1.Dashmulasav 2.Dashmularishta 3.Agnimantha Kwath
9	Patala	Stereospermum Suaveolens	Padal	Demanding	1.Dashmulasav 2.Dashmularishta 3.BruhatpanchamulKwath
10	Shonak	Oroxylum Indicum	Tentu	Demanding	1.Dashmulasav 2.Dashmularishta 3.Bruhatpanchamul kwath
11	Ashwagandha	Withania Somnifera	Ashwagandha	Demanding	1.Ashwagandharishta 2.Ashwagandhasav 3.Ashwagandha Grita
12	Bruhati	Solanum Indicum	Dorali	Demanding	1.Dashmulasav 2.Dashmularishta 3.Bruhatyadi Kwath
13	Kantkari	Solanum Xanthocarpus	Bhuiringani	Demanding	1.Dashmulasav 2.Dashmularishta 3.Kantakari Grita 4.Kantakari Avleha
14	Kirat Tikta	Swertia Chiraita	Kadechirayta	Demanding	1.Mahasudarshan Kwath 2.Bhunimbadi Kwath 3.Kirat Tikta tail
15	Kutaj	Holarrhena Antidysentrica	Kuda	Demanding	1.Kutajarishta 2.Kutajasav 3.Kutajghan Vati
16	Bhrungaraj	Eclipta Alba	Maka	Demanding	1.Bhrungaraj Tail 2.Bhrungaraj Grita 3.Shadbindu Tail
17	Prushniparni	Uraria Picta	Pithavan	Demanding	1.Dashmulasav 2.Dashmularishta
18	Shaliparni	Desmodieum Gangeticum	Salvan	Demanding	1.Dashmulasav 2.Dashmularishta 3.Shaliparnyadi Kwath
19	Nirgundi	Vitex Nirgando	Nirgundi	Demanding	1.Nirgundi tail 2.Nirgundi Grita 3.Maharasnadi Kwath
20	Vasa	Adhatoda Vasica	Adhulsa	Demanding	1.Vasavleh 2.Vasasyrup

					3.Vasarishta 4.vaskasav

The Indian medicinal plants have a tremendous potential in international market, but it gets a set-back due to various reasons, which in short may be listed as below:-

(a) Lack of scientific evidence of efficacy of traditional medicines. The traditional system of medicines though well documented, in Pharmacopoeia of India and being used safely for centuries, have no proven scientific basis of their efficacy.

(b) Uniform quality standards:- Due to various geographical variation, the uniformity of the collected material is often not possible. There is an incoherence in quality.

(c) Not a generic medicine:- The Indian System of medicine is not considered as a generic medicine and provides for different composition for different patients.

(d) Improper communication.- The information provided by the local people is not fulfilling the demand of international market. They are also not aware about new technologies to upgrade their produce.

(e) Intellectual property rights.-Plants have been used in traditional medicines for centuries and cannot be protected by patent.

18.5.3

TRADING OF MEDICINAL PLANTS IN INDIA:

Trading of medicinal plants is extremely complex, strange, traditional, unorganized, highly under-estimated and unregulated. There is no any systematic local, regional or national level data regarding number of species traded, volumes, prices etc. Most of the data is scattered, inadequate and incomparable.

The following factors make medicinal plants trade difficult:

• No catalog of medicinal plants at all-India basis,

• No reliable system of matching trade names to botanical names,

• Medicinal plants are harvested and traded in their raw form, whether as leaves, fruit, flower, seeds, gum/resin, roots, rhizomes, stems, bark or the whole plant. Since most raw drugs are traded in dried forms, long after their harvest, only the most experienced people in the trade are able to recognize the species by their parts used.

FRLHT Bangalore has listed out 178 species which are highly traded in India and the species that are found in Nashik according to Flora of Nashik by Botanical Survey of India, along with its tradable quantity is listed below:- (Source FRLHT)

Table 2

S. No.	Name of Species	Trade names	Estimated annual Trade (MT) in india	Price Range (Rs. per Kg)
1	**2**	**3**	**4**	**5**
1	Abrus precatorius L.	Gunja	200-500	10-15
2	Acacia catechu (L.F.) Wild	Katha	200-500	10-15
3	Acacia nilotica (L.) Wild ex	Babul	200-500	150-250

	Del			
4	Achyranthes aspera L.	Apamarga	200-500	10-15
5	Acorus calamus L.	Vach	500-1000	30-35
6	Aegle marmelos (L.) Correa	Bael	2000-5000	10-25
7	Aerva lanata (L.) Juss.	Cheroola	100-200	10-15
8	Albizia amara (Roxb.) Boivin	Krishna shirish	200-500	5-10
9	Anogeissus latifolia (Roxb.ex DC.) Wall.ex Guill & Perr.	Dhawada	100-200	50-100
10	Azadirachta indica A. Juss	Neem	2000-5000	10-15
11	Bacopa monnieri (L.) Wettst.	Brahmi	2000-5000	30-35
12	Baliospermum montanum (Wild) Muell.-Arg.	Dantimool	100-200	20-30
13	Boerhavia diffusa L.	Punarnava	2000-50000	30-40
14	Bombax ceiba L.	Moehrus	100-200	50-60
15	Boswellia serrata Roxb.	Salai guggul	500-1000	40-55
16	Butea monosperma (Lam.) Taub.[= B.frondosa Wild]	Tesu phool	200-500	15-20
17	Cardiospermum halicacabum L.	Mudakkathan	200-500	10-20
18	Careya arborea Roxb.	Vaari kumbha	100-200	10-20
19	Cassia absus L.	Chaksoo	100-200	40-60
20	Cassia fistula L.	Amaltas	200-500	30-40
21	Cassia tora L. [=Senna tora (L) Roxb.]	Chakoda beeja	5000-10000	5-10
22	Celastrus paniculatus Wild.	Malkangani	200-500	48-55
23	Centratherum anthelminticum (L.) Kuntze	Kali zeeri	500-1000	70-75
24	Chlorophytum tuberosum Baker	Safed musli	100-200	325-425
25	Clerodendrum phlomidis L.f.	Arnimool	200-500	15-20
26	Curculigo orchioides Gaertn.	Kali musli	200-500	35-45
27	Cyclea peltata (Lam.) Hook.f & Thomson	Paadu kizhangu	100-200	120-135
28	Cynodon dactylon (l.) Pers.	Durva	100-200	10-25
29	Cyperus esculentus L.	Musta	1000-2000	10-15
30	Cyperus rotundus L.	Nagarmotha	2000-5000	15-30
31	Datura metelsm L.	Duttura	200-500	10-15
32	Desmodium gangeticum (L.) DC.	Salparni	1000-2000	5-10
33	Eclipta prostrata (L.) L.	Bhringraj	2000-5000	15-20
34	Emblica officinalis Gaertn. [=phyllanthus Emblica L.]	Amla	16000	30-35
35	Ficus benghalensis L.	Vada chhal	200-500	10-15
36	Gloriosa superba L.	Kalihari	100-200	600-750
37	Gmelina arborea Roxb	Gambar chhal	1000-2000	10-20
38	Hedyotis corymbosa (L.) Lam.	Pitpapra	200-500	10-20
39	Helicteres isora L.	Marodphali	200-500	20-25
40	Hemidesmus indicus (L.) R.Br.	Anatmool	500-1000	60-65
41	Holoptelea integrifolia (Roxb.) Planch.	Aavithali	100-200	10-15
42	Holostemma ada-kodien Schult.	Jeevanti	100-200	250-270
43	Indigofera tinctoria L.	Akika	100-200	30-35

44	Ipomoea mauritiana Jacq.	Palmudhakkan	500-1000	10-15
45	Ipomoea nil (L.) Roth	Kaladana	100-200	10-15
46	Jatropha curcas L.	Nepalam seed	200-500	15-30
47	Lannea coromandelica (Houtt.) Merr.	Jingini	100-200	10-20
48	Lobelia nicotianaefolia Roth ex Roem.& Schult.	Lobelia leaves	100-200	80-100
49	Madhuca Indica J.F.Gmel.[=Bassia latifolia Roxb.]	Madhuka	>10000	10-20
50	Mimusops elengi L.	Bakul	100-200	30-50
51	Morinda pubescens J.E.Sm.	Manjanathi	100-200	15-20
52	Mucuna pruriens (L.) DC.	Kaunch beej	1000-2000	30-35
53	Ocimum americanum L.	Ban tulasi	500-1000	20-25
54	Oroxylum indicum (l.) Benth.ex kurz	Tetu chhal	1000-2000	20-30
55	Plectranthus barbatus Andrews	Gandhira	1000-2000	65-75
56	Pongamia pinnata (L.) Pierre	Karanji	2000-5000	20-25
57	Psoralea corylifolia L.	Bawachi	200-500	10-20
58	Rubia cordifolia L.	Manjistha	500-1000	60-70
59	Santalum album L.	Chandan	200-500	700-850
60	Schrebera swietenioidess Roxb.	Ghanti phool	100-200	5-10
61	Semecarpus anacardium L.F.	Balave	1000-2000	5-10
62	Sida rhombifolia L.	Bala	5000-10000	5-10
63	Solanum anguivi Lam.	Katheli badi	1000-2000	5-10
64	Solanum nigrum L.	Makoi	2000-5000	40-45
65	Sphaeranthus indicus L.	Gorakh mundi	200-500	15-20
66	Sterculia urens Roxb.	Karaya	500-1000	80-100
67	Stereospermum chelonioides (L.F) DC.	Patala	1000-2000	20-30
68	Terminalia arjuna (Roxb.ex DC) Wight & Arn.	Arjun	2000-5000	10-15
70	Terminalia bellirica (Gaertn.) Roxb.	Behra	2000-5000	10-15
71	Terminalia chebula Retz.	Harda	5000-10000	10-15
72	Tinospora cordifolia (Wild) Miers ex Hook	Giloy	2000-5000	10-15
73	Trachyspermum ammi (L.) Sprague	Ajwain	1000-2000	45-55
74	Tribulus terrestris L.	Gokhru	2000-5000	10-20
75	Trichosanthes cucumerina L.	Patol panchang	500-1000	15-20
76	Vetiveria zizanioides (L.) Nash	Lavancha	200-5000	30-35
77	Vitex negundo L.	Neergundi	200-500	10-15
78	Withania somnifera (l.) Dunal	Ashwagandha	2000-5000	60-70
79	Wrightia tinctoria R.Br.	Inderjau	200-500	100-120
80	Ziziphus jujube (L.) Gaertn.	Ber	200-500	60-70
81	Ziziphus xylopyrus (Retz.)Wild	Ghonta phala	100-200	5-10

18.5.4
Indian medicine in Western/modern system of medicine-

In addition to the Indian plant species being used in Indian System of medicine ayurvedic, as many as 192 Indian indigenous species (Appendix –II – XV-13). have found their usage in allopathic system of medicine and the list of eight species that are used in allopathic system is listed below in the Table 3 while according to Botanical Survey of India, are found in Nashik District.

(Source:FRLHT, Bangalore). Many of the plants usage has now being replaced by synthetic chemicals.

Table 3

S.No.	Botanical names of trees
1	Acorus calamus L
2	Anamirta cocculus (L) WIGHT & ARN.
3	Brassica nigara (L) KOCH.
4	Capsicum annuum L
5	Datura metel L.
6	Rauvolfia serpentina (L) BENTH.EX KURZ
7	Santalum album L
8	Sesamum indicum L.

Promotion of Medicinal Plant in East Nashik Division: FRLHT has identified one MPCA in Saptashurungi area of East Nashik Division, Kalwan Range This shows the abundance of medicinal plant species in East Nashik Division. AYUSH Department of Government of India under Indian system of medicine is an determined organization to promote these medicinal plants and has come up with the various benefactory schemes to promote them in forest area. There is a massive gap between the demand and needs and especially for the plant species, which are used in tonic formulation.

For meeting demand cultivated material is infinitely more appropriate for various uses. Systematic cultivation of medicinal plants is urgent needs to fulfill the demand of markets.

a. Good sustainable forestry practices which will include appropriate selection, identification, propagation methods, cultivation techniques, harvesting, stepwise quality control of raw material up to processing stage, post harvest treatment, storage and safety.
b. Development of protocols for producing planting materials with desirable agronomic and therapeutic chemical derivatives.
c. Genetic transformation techniques to be developed and standardized.
d. Organic farming of medicinal plants as per world demand of today.

The existing medicinal plant areas shall be preserved by identifying them at the time of coupe demarcation, and then left them undisturbed. Effort shall also be made to increase the stocking of NTFP species such as Khair, Sitaphal, Neem, Anjan, Apta, Tendu, Moha, Dhawada, Arjun etc in the forest area. Presently, the plantations of medicinal plants under the project ‘Dasmul’ are being undertaken in this division. The Dasmul species such

as Aegle marmelos(Bel), Gmelina arborea(Shiwan), Stereospermum colais (Padal), Oroxylon indicum(Tetu) etc.are being raised under this project. This project was started in the year 2009-10.The detail of medicinal plant's plantations taken under this project is as under.

Sites of Plantations under Dasmul Project

Sr.No.	Range	Name of site	Area (Ha)	Year
1	Nandgaon	Kasari	10	2009-10
2	Dindori	Varvandi	10	2009-10
3	Nandgaon	Kasari	20	2010-11
4	Dindori	Varvandi	20	2010-11

Similar types of more projects should be taken up in order to increase the occurrence of medicinal plants. A botanical garden has also been established at Ozharkhed nursery to conserve the rare plants. In addition to this, the regular plantations schemes should include at least 20 percent of NTFP species.

18.5.5

Promotion of Medicinal Plants:-

The biggest challenge facing the artificial propagation of many of the medicinal plants, especially related to herbs and shrubs is the lack of the availability of the viable seeds. FRLHT has published a book on tropical Indian medicinal plants, which provides a nursery technique for 81 forest species (found in Nashik Circle as per BSI). Moreover, TFRI, Jabalpur in its letter attached as Appendix-II-XV.14. has stated that the seedlings of 33 forest species are available in their nursery at a specified rate. In every Afforestation scheme to be implemented, under the Working Plan, shall contain at least 10% of the trees species with its known ayurvedic usage, as listed in Table 3 . In addition to that annually 50 hectare of plantation shall be taken on a suitable soil of medicinal plant species which are of herbaceous and shrub nature. These plantation will be raised by following usual plantation practice, by first raising its nursery and then transplanting them in forest along with earth ball/ in small polytubes. The species selected shall be from the endemic species of area listed in Table-2 and each species shall not exceed 5% of its total planting stock. A minimum of 25 such species shall be planted and nursed. Every year this diversity in raising nursery stock shall increase. All 14 herbs/shrubs species listed in Table-1 shall be raised. Similarly, species used in Allopathic System of medicine as given in Table-3 shall also be planted. The nursery technique of few of the species is annexed in Appendix – II-XV-15. East Nashik Forest Division shall create one central nursery for especially dedicated to medicinal plantation, since many of these species (especially shrub) can be raised through vegetative propagation, a rooted stock nursery of these species will be raised well in advance.

18.5.6

6.Harvesting :

Harvesting of NTFPs should be done very carefully. The method of harvesting must be non-destructive and scientific. The leaves and bark of plants shall be taken in such a way that it does not cause any damage to them. The branches of Tendu and Apta trees shall not be broken for collection of their leaves. Seeds and fruits of the plant shall be harvested when they are fully mature. Burning of the site for collection Moha flowers and other seeds shall not be allowed as it spreads to the adjoining forest area and causes heavy damage. Harvesting of roots must be avoided as it may kill the plants. Felling of trees or shrubs and uprooting of herbs shall not be allowed in any circumstances. Tapping of gum from the tree such as Dhawda, Kandol and Babool shall be done as per the rules prescribed by FRI Dehradun. Scientists of Central Arid Zone Research Institute (CAZRI), Jodhpur had carried out certain experiments regarding tapping of gum from babul trees and have found that gum exudation from most of trees can be increased by injecting two drops or 2ml of the plant hormone ethephone (2- chloroethyl Phosphoric acid) into the tree. While using ethephone injection, it is not necessary to scar the tree trunk. The exudation starts due to abscission of cellulose tissues of various sites of the tree. Increase in exudation of gum when ethephone is injected, suggests that the gum is a normal metabolic product in certain plants, which is already present as sap in gum ducts. When cellulose cells are broken due to ethephone, creating abscission of gum ducts at several points , gum ooze out at such points. It has been observed that this method causes minimum injury to the tree and exudation is not confined to a particular site (e.g. place of blazing of the stem) as in the case of conventional method of gum tapping. The copy of gum tapping rules is given in the **Appendix II, VII - 1.**

18.5.7

7. Value – Addition:

It has been commonly seen that villagers do not maintain the standard of quality at the time of collection of NTFPs. The green leaves, bark and fruits collected get infected with fungus due to high level of moisture in them. Therefore, villagers shall be given training by Division regarding drying of the collected products in shade so that their nutritive value remains intact and quality is not spoiled. A proper cleaning of the material must be done before its disposal in order to fetch high prices. Some time the collected material is stored in the homes for reasonable period before its sale .But care is not taken to store it properly due to which villagers do not get remunerative prices. They must be trained regarding standard methods of storage. All these practices will add the value to their product and

help them in fetching good prices. It will increase their earning and give boost to the trade of NTFPs.

18.5.8

8. Marketing of Products:

Marketing is the most important link in the trade of NTFPs. Usually it is seen that villagers collect the NTFPs, but it is sold to the local traders at a throw away prices. There is no organized market particularly in tribal areas. Most of the profit is taken by the intermediary traders only. Therefore, staff should facilitate that all the 33 monopoly products reserved for TDC must be sold to the corporation at the pre fixed rates. No trader shall purchase these products. JFM committees must be trained and encouraged to make the local people aware regarding marketing facilities available for them in tribal areas. In the non tribal areas also, forest department staff must help the villagers in getting remunerative prices for product. It will help in strengthening the economy of rural communities living around the forest and restoring their confidence in the department.

CHAPTER-XIX

WORKING PLAN FOR BAMBOO (OVERLAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

19.1.1 This is an overlapping working circle containing compartments having harvestable bamboos. Bamboo clumps are mainly available in Dindori, Umbarthan, Kalwan and Kanashi ranges. No yardstick has been provided here for the selection of compartments in this Working Circle, but it broadly contains compartments with more than 250 clumps per hectare. In other ranges, it is found in very scattered form. The total area included in this working circle is 5627.391 ha. The range wise distribution of bamboo area is given below.

Table

Sr.No.	Range	Area(ha)	Compartment and survey numbers
1	Umberthan	2218.12	3,5,8,9,13,28,35,36,37,39
2	Kalwan	2163.161	110,234,264,265,297,299,Mokbhanagi S.N.52,56,57
3	Kanashi	826.611	100,105,259
4	Dindori	419.499	566
		5627.391	

SECTION 2: GENERAL CHARACTERS OF VEGETATION

19.2.1 There are two species of bamboo found in this tract. These are Dendrocalamus strictus (Manvel) and Bambusa arundinacea (Kashti). The condition of bamboo clumps is not very satisfactory. There are in hacked, malformed and congested condition. The gregarious flowering of Kashti bamboo took place in this area in year 2007-08. Consequently, most of bamboo clumps got dried. But it was not extracted timely except in Kalwan range, where dry bamboos were extracted from 65 hectares of forest area in compartment No. 299. This resulted in breaking and decaying of culms at its site. Good natural regeneration of Kashti bamboo has taken place at many places, but it is congested and has a switchy growth, requiring an immediate silvicultural intervention.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

19.3.1 The objects of management of bamboo in this area are as follows.

(i) To improve the condition of bamboo and secure better yield from it in future.

(ii) To encourage the natural regeneration and secure its establishment.

(iii) To meet the local demand of bamboo to the extent possible.

(iv) To improve the stocking of bamboo in the area where it existed in the past through artificial regeneration.

SECTION 4: METHOD OF TREATMENT

19.4.1 The mature crop of bamboo mainly comprises of Dendrocalamus strictus (Manvel). It occurs in scattered form in ranges, mentioned above in para 19.1.1. Moreover, clumps have not been worked scientifically in the recent past, with the result there have become congested and deformed. Therefore, in the first phase, bamboo crop will be cleaned map in phased manner. The broken, half burnt, decayed, dry and badly damaged or malformed bamboo culms will be removed in order to provide space for emergence of new culms. A trench of size 60 x 30 cms will be dug around each clump and the dug out soil will be heaped around it. The yearwise schedule of cleaning operations is given in the **Appendix II.IX-1.** Subsequently, this bamboo will be worked scientifically after a lapse of three years. The culms of first and second year will not be touched. Only the old culms will be removed in such a way that the retained culms are evenly spaced in the clump. The number of old culms retained in each clump will be equal to the sum of first and second year culms with minimum of eight culms will be retained in each clump. The year wise schedule of working of bamboo is given in the **Appendix II.IX-2.** The prescription of working of the bamboo clump is as below.

Spare the working of clump untill it has attained its maximum development, which will be recognized by the average thickness of the clump of successive years having ceased to increase, and when this maximum has been reached, then take out fearlessly, every year as much shoots as can be replaced by the subsequent season's growth. To take out less would be uselessly sacrificing every year an amount of production equal to the defect on the quantity cut below the possible annual production. If the annual production or, the average size of the shoot is found to diminish and the falling off can not be traced to disease or unfavorable seasons, it is a proof that the over cutting has taken place and felling must be proportionately reduced.

The dead and dried culms of Kashti bamboo will be removed where ever it is still lying in the forest area. It will be removed carefully so that it does not cause any damage to the young regeneration.

METHOD OF EXECUTING FELLINGS

Demarcation :- The coupe due for working will be demarcated by giving three geru bands at 15 cm. intervals on the tree selected at suitable intervals along the periphery of the coupe. The lower band will be at breast height. For better supervision and control on cutting, the Deputy Conservator of Forests will order the successive opening of only one or two compartments at a time in a coupe, so as to ensure proper observance of cutting rules and thorough exploitation. It will be necessary to divert the additional staff for the purpose of enforcing rigid observance of the cutting rules. The following cutting rules have been prescribed.

i) Bamboo extraction will not be permitted during the monsoon period, that is from 15th June to 30th September, as this is the period of information of new culms.

ii) As far as possible, the cutting of bamboo should end by March, i.e. by the end of winter, when the culms are almost devoid of starch and attract less insect borer..

iii) A clump will not be considered mature for exploitation unless it contains more than 8 mature (more than one year old) culms. The clumps having culms less than 8 will not be harvested. Only broken, dead, dry badly damaged or over mature bamboo will be felled. A failure to do that will cause congestion in the clump. Clear felling of clump is never advisable. A minimum of eight should be there wherever possible.

iv) In a mature clump, the following types of culms (green & living) will be retained.

(a) All current years i.e. less than one year.

(b) From the rest, culms equal in number to the current year (less than one year) culms or eight which ever is more.

v) If mature culms are available for retention, as per length of more than 1/3 of the normal length or the culms which are badly damaged.

(a) Culms where the growing shoots have been cut to a length of more than 1/3 of the normal length or the culms which are badly damaged.

(b) Twisted, bent or otherwise malformed culms.

(vi) Culms to the extent available for exploitation as per rule IV, above should be exploited in such a manner that the clump is evenly worked throughout and that the bamboos to be retained are evenly spaced out in the clumps. The clump is worked in a horse-shoe manner.

(vii) The culms on the periphery of the clump will not be removed except where absolutely necessary to facilitate working in the interior portion of the clump.

The leading exterior culms may not be cut under any circumstances, even if are malformed, as their retention is in the interest of outward growth of rhizome and clump and to support new culms.

In order to make all portion of the culms accessible for marking, the clear felling in the form of a wedge may be permitted, so that the opening of the wedge shall not be more than one meter wide. The depth and width at the narrow end of the wedge should be less than 2 meter wide all around. Working in this belt will be strictly according to the above rules.

(viii) Height of cutting is of no importance for the further culms formation. However, the height at which the culms shall be cut, must not be lower than 15 cm. and more than 45 cm. from the ground level, and in any case, not higher than the second two culms in each clump, should be cut at 3^{rd} to 4^{th} internodes to provide forage to wild animals.

(ix) A clump should be clean of debris before leaving it.

(x) In case of flowering clumps, exploitation should be deferred till the seeding is completed. Gregariously or sporadic flowered clump should be clear felled.

(xi) The following acts will be strictly prohibited.

(a) Digging of rhizomes.
(b) Cutting the tops of bamboos for fodder.
(c) Use of tender bamboos.
(d) No grazing to be permitted during the rains in bamboo forest, which have been worked in the previous open season.

(xii) A clump will be distinguished as an independent clump where its periphery is easily discernible from the adjacent clumps, irrespective of its distance from other. Only when such a distinction is not possible, two clumps within one meter distance will be considered as one.

(xiii) The exposed bamboo or rhizome on the periphery should be covered with the slash and earth to provide nourishment to spreading rhizomes and thus promoting peripheral growth of culms.

(xiv) If soft flexible, imperfectly lignified, less than three years shoots are to be supplied to Burads for basket weaving much against the silvicultural norms, in that case, an equal number of old culms, which would otherwise be cut, must be preserved as a set off in that working clump.

(xv) All climbers infesting the bamboo clump will be removed.

(xvi) The sharp edge weapon shall be used for harvesting bamboo, to avoid splitting of bamboos.

(xvii) For reducing congestion, cleaning will be done to open up the clump, to such as extent, that it is possible.

19.4.2 Natural Regeneration:

The Bambusa arundinacea (Kashti) bamboo has flowered gregariously in this tract in the year 2007-08. A profuse regeneration of this species has come up in many areas. Therefore, old bamboos of this species will not be available for harvesting in the initial period of this plan. But the regeneration of this bamboo species need to be cared, so that it establishes well. The regeneration in these congested patches will be spaced suitably so that it is evenly distributed and get proper chances for its development. In there areas, a 150 cms focii, at the rate of 250 per hectare will be formed in such a way that they are evenly distributed over the whole area of natural regeneration. All the rank growth around the focii up to 1.5 mt. will be cleared. All the climbers within and around the focii will be removed. The old dead and decaying bamboo culms interfering with the natural regeneration will be cleaned. The areas of regeneration will be strictly closed for grazing. Special care will be taken to protect this area from fire.

19.4.3 Other Areas:

These areas either have no bamboo or have scattered clumps over it. In these areas, it is economically not feasible to extract bamboos. The scattered bamboo clumps are badly damaged due to over harvesting. Therefore, at the time of annual coupe working, these clumps of bamboo will be cleaned properly to facilitate emergence of new culms.

19.4.4 Artificial Regeneration:

In Improvement Working Circle, bamboo will be planted at suitable sites having good soil .

19.4.5 Storage.

The cut bamboos should be stored vertically in the depot, to avoid damage due to Dinoderus brevis, Dinoderus mimutes, Dinoderus ocallaris during monsoon. During monsoon, it should not be kept horizontal.

CHAPTER-XX

MISCELLANEOUS REGULATIONS

SECTION 1: DEMARCATION AND MARKING TECHNIQUE

The demarcation of annual coupes will be done one year advance.

21.1.1. Demarcation of Coupes: The demarcation of annual coupes will be done by clearing the strip of three meters wide around the coupe. Poles of two meters height will be erected in the centre of the strip. The poles will be erected in such a way that one pillar is visible from the next pillar. These pillars will bear the coupe number, name of the felling series and working circle on the side away from the area of the coupe.

The trees above 45 cms girth standing at suitable interval will be given the two coal tar bands and a geru band in between after scrapping the loose dead bark. The lower coal tar band will be at breast height and upper coal tar band will be 15 cms above it. The marked trees will be given the serial number just below the lower coal tar band and in the side facing away from the coupe area. The trees bearing the coupe demarcation bands will not be felled. The record of such trees will be maintained in the marking register.

Sr. No.	Species	G. B. H.	Remarks
1.	2.	3.	4.

21.1.2 Demarcation of Sections: If required, each coupe will be divided into four sections by clearing the bush wood on a strip of 1.5 mts. The trees above 45 cms girth at a suitable interval on this section line will be given two coal tar bands 15 cms apart. The lower band will be at gbh. Section numbers will be given on these trees just below the lower coal tar band on the side facing away from the section area.

21.1.3 Demarcation of Protection Areas: The protection areas in the coupe will be demarcated by giving two geru bands on selected trees above 45 cms girth. The lower band will be at gbh. In addition to this, a geru cross(X) will be given in between two geru bands in the direction facing away from protection area. The trees will be given the serial number just below the geru band in the direction of cross. If the number of PAs is more than one in a coupe, then all the trees standing on the periphery of each PA will be numbered in Arabic.

For example, trees on periphery of PA number one will bear the number I/1, I/2 etc where as trees on PA number two will bear the number II/1, II/2 etc.

21.1.4. Demarcation of Other Areas in Coupe: All the other areas in the coupe will be demarcated by giving one geru band at gbh and one coal tar band 5 cms above it. The coupe demarcation shall be certified by the RFO.

"I, ----------, RFO,----------certify that I have personally inspected the demarcation of coupe No. ---------in compartment No. ---------- of ---------- F. S. of----------W.C. on dated ----------and found that coupe has been demarcated as prescribed in the Working Plan. The area of the coupe is ---------- hectares."

Date : Signature of the RFO

21.1.5. Marking Technique: The trees marked for felling will be given a geru band at breast height. The marked trees will bear a marking hammer mark at breast height and at the base of the tree on a blaze of 10 cms x 10 cms size. All the timber trees will be marked by digit numbers. The other trees marked will be given serial number by coal tar only. The digit and coal tar numbers will constitute separate series. A proper record will be maintained for all the trees marked for felling. The abstract will be prepared for all the marked trees as timber trees, poles and fuel wood trees. If a tree is capable of yielding 30 percent timber, it will be classed as timber tree. Trees yielding 10-30 percent timber will be grouped as carpentry trees .The trees capable of yielding less than 10 percent timber will be classified as fuel wood. Trees having girth less than 60 cms at gbh will be treated as poles.

SECTION 2:

21.2.1. Irregular harvesting : Irregular harvesting of timber, fire wood and other minor forest produce is prohibited except in the following cases.

1. Removal of dead fallen fire wood full trees and timber trees uprooted by wind or storm from all parts of forest, except the coupes due for working in the current year , will be done. Every year in the month of October, each beat guard will report the availability of dead fallen fire wood trees compartment wise to the concerned RFO. The same will be reported to DCF by the RFO. DCF will compile this information and fix the number of trees to be removed by mid- November. After permission of DCF, harvesting of such trees will be done and material will be collected at one place. This material will be first offered to the Gram Panchayat or Forest protection committees. If no such demand comes from Gram Panchayat or JFM committees, the material will be brought to the sale depot and sold in open action. A proper record of the material extracted from each compartment and the

number of beneficiaries will be maintained and entered in the compartment history forms.The remnants of illicit cut material can be removed from the forest by an order by Dy.CF (East Nashik)

2. The felling of trees on fire lines may be carried out if necessary without making reference to the Chief Conservator of Forests.

3. The felling of trees under electric and telephone lines will be carried out by the DCF in a manner as permitted under Forest Conservation Act 1980 and the guidelines issued by Govt. of India from time to time.

4. Felling of trees on forest land required by other departments such as Irrigation, PWD etc. will be under taken after the proposal for the use of such forest land for non-forestry purpose has been approved by the Govt. of India under the provisions of Forest Conservation Act, 1980.

5. Forest produce required for departmental works and free grants may be removed on the orders of the Deputy Conservator of Forests under the provisions contained in A.256 of Bombay Forest Manual Vol. I, A-147 of Bombay Forest Manual Vol.III respectively up to the limit of his powers. The fellings under these provisions, however, must be on silvicultural lines and as far as possible will be confined to the coupe of the year or to the coupe to be worked next. Never the less, felling of fruit trees will be excluded and fellings in a radius of 40 m. from the perennial water-holes,nalas and springs will be prohibited.

6. Irregular harvesting of scattered bamboo clumps outside the area falling in Bamboo (overlapping) Working Circle shall be permitted, provided the culm removed in such Irregular harvesting is more than three years old and age of clump is exceeding eight years.

7. Trees dangerous to human existence /buildings/structures shall be permitted to fell by Dy.CF (East Nashik) and it shall also include its debranching.

8. High stumps of illicit cut trees from any part of the forest can be removed by the permission of Dy.CF (East Nashik) after a due panchnama has been drawn.

9. Removal of minor forest produce from the forest shall be permitted as per rules and the collection of grasses from any part of the forest shall constitute no deviation.

10. Any thing done in exercise of rights and concessions shall not constitute a deviation and shall be a part of Irregular harvesting.

11. Trees of semal, Moyen and maharukh will permitted to be removed from the worked coupe on demand. The exploitable girth will depend on market demand. In no case it should be less tha 90 cms, girth at breast height. The removal will not constitute a deviation.

12. Felling of trees for research purpose/stem/stump analysis shall be permitted after a due permission has been obtained from Dy.CF (East Nashik)

13. Clearing of bushes and grasses in exercise of any scheme/plan duly sanctioned shall not constitute deviation and shall be done after a due sanction has been granted by Dy.CF (East Nashik)

14. Any silvicultural thinning due earlier but not done when due, shall not constitute a deviation when done later and shall be a part of an Irregular harvesting

SECTION 3: Deviations:

21.3.1 The following works will not be considered as deviations of the working plan.

1. Removal of dead fallen fire wood trees.
2. Petty feelings carried out with permission of competent authority like Trees dangerous to human existence.

21.3.2 Deviation from Working Plan: The following works will be considered as deviation from the working plan.

The felling and disposal of forest produce from forest land coming under the purview of the Forest Conservation Act, 1980. Such land may be for dams, canals, tanks, roads or other works. This will require permission from the competent authority. There are two types of deviations as per the National Working Plan Code 2004.

A) **Deviations which do not change the basis of management permanently.**

1. The non working of a coupe in the prescribed year or working of a coupe in the year not prescribed by the plan.
2. Changes in the areas of the coupe due to disforestation or execution of any special scheme.

B) **Deviations changing the basis of management permanently.**

1. Changes in the silvicultural systems.
2. Formation for new felling series.
3. Clear felling of natural forest.
4. Large scale felling due to natural calamities.

The sanctions to all the deviations will be obtained well in advance. Application for sanction to such deviations will be submitted timely so that the permission is received before deviations occur.

21.3.3. Procedure for Obtaining Sanction of Deviation:

1. For deviations of type 'A' above, the territorial DCF should submit the proposal of deviation to Additional Principal Chief Conservator of Forests, (Working Plan) West Pune through Chief Conservator of Forests, Working Plan, Nashik. The Additional Principal Chief Conservator of Forests, (Working Plan) West , Pune will give the necessary sanction for deviation.

2. For deviations of type 'B' above, the territorial DCF will submit the deviation proposal to Chief Conservator of Forests (Territorial) through Chief Conservator of Forests, Working Plan, Nashik. The Chief Conservator of Forests, W P Nashik will scrutinize the proposal and send to Chief Conservator of Forests (Territorial) Nashik with his opinion. The Chief Conservator of Forests (Territorial) will submit the proposal to Principal Chief Conservator of Forest, through Additional Principal Chief Conservator of Forests, (Working Plan) West, Pune . The necessary orders for grant of deviation will be issued by the PCCF, Office.

SECTION 4 Maintenance of Boundaries:

21.4.1 The external boundary of the forest will be maintained by clearing the brush wood and shrubs in a strip of 12 meters width. The trees on the boundary will not be felled so long as they do not obstruct the view of boundary marks. The demarcation of the boundary will be done by erecting the cement concrete pillars or cairns as per the condition of the site and instructions issued by PCCFS, MS, Nagpur. The location of the pillars or cairns will be fixed in such a way that one pillar or cairn is visible from the other on the boundary line. The specifications of cement concrete pillars for boundary demarcation will be as per the size and design approved by PCCF, MS, Nagpur. The detail of the $1/5^{th}$ boundary demarcation scheme is given in the **appendix II.XIII-2.**

The internal compartment boundaries will be maintained by clearing the under growth in a strip of 3 meters width except where it runs along permanent features like road or water body. Tin plates of 15cm x 10 cm.size and bearing the compartment number will .be affixed on the trees at height of 3 meters. These tin plates will be fixed at an interval of 250 meters and at all the corners of the compartments. The tin plates will be painted white and the compartment number will be written on it with red paint.

The field staff will be responsible for maintenance and protection of all the boundary marks. Each beat guard will check all the boundary pillars in his beat at least once in a year and maintain the record of his inspection in a booklet. Similarly round officer will also check all the boundary pillars every year which are due for maintenance and repair as per the $1/5^{th}$ boundary demarcation scheme. He will keep a record of it with him and will submit the report to RFO regarding his verification. If any person alters, moves, destroys or defaces any boundary mark, he will be booked under section 63 (C) of IFA 1927.

SECTION 5: Roads and Buildings:

21.5.1 The detail of forest roads and buildings is given in **appendix no. I, III - 3, II , XIII - 1.**

Research Plots: There is no research plot in the forest area of this division.

SECTION 6: ECOTOURISM:

21.6.1 The division is taking up eco-tourism works under plan funds to develop certain sites. This will attract tourists and create awareness about eco-tourism. However, these works will be carried out after taking the necessary permission (where ever required) under section 2 of "Forest Conservation Act 1980". The detail of sites being developed under eco-tourism is as under.

Sites of Eco-tourism

Sr.No.	Range	Name of site	Detail of works
1	Dindori	Ramshesh Fort	Water ponds, fencing, solar lights
2	Dindori	Ozharkhed	Watch towers, fencing, planting tall seedlings
3	Kanashi	Thanapada	Construction of Pagodas, water ponds, nature trails
4	Kanashi	Hatgad(Punad)	Watch towers, Pagodas
5	Kalwan	Sapatshrungi	Garden
6	Kalwan	Dhodap fort	Repair of stone wall, cleaning of water ponds
7	Chandwad	Chadreshwari temple	Link road, fencing, entrance gate, repair of parking etc.

SECTION 7: OBSERVATIONS IN EVALUATION REPORTS OF PLANTATION ACTIVITIES.

21.7.1 The evaluation of all the plantation activities are carried out by Divisional Forest Officer, Evaluation, Nashik and his subordinate officers and staff, and.while going through the evaluation reports of few plantations carried out during last decade, certain observations are found to be important and worth mentioning here so that necessary steps be taken up by the territorial staff of East Nashik Division while implementing the working plan prescriptions. These observations are :-

(1) It is necessary to prepare site specific estimate of plantation activities before taking up the activity.

(2) It is necessary to seek the cooperation of villagers so as to contain the menace of cattle grazing .

(3) Treatment map should be prepared by Range Forest Officer (territorial).

(4) Special efforts and steps needed to be taken to protect the plantations.

(5) Though a number of species have been chosen for plantation like khair, sisoo, chinch, shivan, subabul, Awala, babul, kashid, gliricidea, prosopis etc but in the long run only plants of subabul, gliricidea, prosopis, babul etc. have survived with good growth.But in ranges of Kanashi, Kalwan, Deola, Umberthan and Surgana, where the soil quality is good, important species like teak, khair,sisoo,shivan should be preferred. In the areas with inferior soil Neem, Chich,babul should be preferred for plantation instead of subabhul and gliricidea.

It is suggested that Deputy Conservator of Forests and his senior subordinate officers should take up plantations of indigenous species. Valuable species like teak, khair, sisoo need to be planted on large scale as forest areas are by and large suitable for these species. Other important species like neem, palas, shivan, chinch, babul should also be prefered. While planting, species corresponding to the particular soil should only be planted. The nursery stock should be raised in consultation with DCF/ACF by RFO (territorial).

SECTION: 8 FIELD TOURING BY SENIOR OFFICERS OF THE DIVISION

21.8.1 It has been observed that during last few decades serious damage has been caused to the rich forests of the Division particularly in the ranges of Surgana, Umberthan, Kanashi, Kalwan & Deola. In order to prevent the incidences of illicit cutting and fire, senior officers of the division viz. D.C.F. and ACFs should extensively and regularly tour the remote and vulnerable forest areas. It has been observed that senior officers of the division do not make halts in the vulnerable ranges/ places as a result there appears to be no fear in the minds of bad elements living in the villages near to forest areas and habitual offenders.

It is recommended that DCF and ACFs should halt at least 5 to 6 days each month in remote and vulnerable forest areas at convenient places and cover at least 50 to 75 km of surrounding forest areas from the place of halt. They are also supposed to mingle with the local people and villagers and try to convince the people that forests are very important resources needed for their survival and its conservation and development would help bringing about economic upliftment of the people and villages. It is necessary that forest officers / staff of the division should demonstrate by their actions that they are meant to conserve and develop the forest resources for the people. Illicit felling and clandestine removal of the forest produce would be controlled by regular patrolling by the forest staff. The mobile squad unit should also be strengthened in the Division. The local people who provide important information about illicit felling cases, which result in successful prosecution of offenders, should be rewarded. The Forest Rest house in the remote areas should be repaired on priority.

SECTION : 9 GRAZING CONTROL :

21.9.1 A functional classification of the forest is given in section 2 of chapter 1, Part II as enunciated in the grazing policy formulated by the Govt. of Maharashtra vide its Resolution No. MFP- 1365/13221-Y Dated 6/12/1968. The grazing rules are framed by the Govt. of Maharashtra vide its resolution No. MFP/1371/237035-z Dated 3/11/1973. The grazing will be controlled as per the prescribed grazing incidence for each class of forests.

Keeping in view , the above provisions, the grazing in the various Working Circles of the plan will be regulated as under.

Protection Working Circle : As per functional classification , majority of the forest falling in this Working Circle are classified as "minor forest" with small percentage of the area classified as tree forest . The areas under this W.C, are completely protected from grazing .

Improvement Working Circle : This Working Circle comprises of **tree forests** and the maximum grazing incidence prescribed for it is one cattle unit per 1.2 ha. All main felling coupes will remain closed to grazing for a period of 5 years from the year of felling .

Afforestation Working Circle : The forest of this Working Circle can mainly be classified as "minor forest." The grazing incidence for these lands should not be more than one cattle unit per 0.8 ha. The main coupes will remain closed for a period of 5 years from the year of planting

Fodder Management Working Circle : The forest of this Working Circle can mainly be classified as "pasture forests." The grazing incidence for these lands should not be more than one cattle unit per 0.8 ha. This main coupes will remain closed for the period of 5 years from the year of planting .

Old Plantations Management (Overlapping) Working Circle : It carries "minor forests" for which the grazing incidence prescribed is one cattle unit per 0.8 ha.

SECTION: 10 SURVEY AND MAPS

21.10.1 Eight sets of fresh maps on 2 = 1 mile scale have been prepared as follows :

Management maps : -- 6 sets (4 cut and mounted + 2 uncut and mounted)

Stock maps : - 2 sets (1 cut and mounted + 1 uncut and mounted)

The distribution of these maps will be as follows ;

I. Chief Conservator of Forests , Working Plan Nashik Division :

One rough uncut and mounted set showing the existing compartment boundaries and stocking details will be prepared based on which the master sets of stock maps and management maps showing the compartments , coupes , felling series , Working Circles and other management details will be prepared .

1. Management maps 1 master set (uncut and mounted)

2 Stock maps 1 master set (uncut and mounted)

II. Deputy Conservator of Forests "East Nashik Division" ;

1. Management maps 3 sets (uncut and mounted)

2 Stock maps 1 set (uncut and mounted)

III. Chief Conservator of Forests (T) Nashik Circle ;

1. Management maps 1 set (cut and mounted)

IV. Additional Principal Chief Conservator of Forests (west) Pune

1. Management maps 1 set (cut and mounted)

Any alteration in the forest areas due to disforestation (as per the gazette notifications) or due to compensatory afforestation have been shown in the maps. In addition the Reference map on 1 = 4 miles scale showing Working Circles, range boundaries , roads and other details, will also be prepared.

SECTION 11: FIRE PROTECTION :

21.11.1 The forests of East Nashik Forest Division are valuable and need careful fire protection over the entire area. Due to fire a considerable damage is caused to the timber besides causing long range effects on the soil fertility, young crops and regeneration. The special and determined efforts are needed to in force the proper fire discipline which has undoubtedly slackened in recent years. For the purpose of fire protection the areas are classified as follow –

21.11.2 Class – I : Forests completely protected :-

This class will include –

(i) All plantations.

(ii) All forests of protection and selection working circle.

(iii) All regenerated coupes of all working circles till, the young crop has attained an age of 10 years.

(iv) All Government timber depots.

(v) Any other areas of special importance ordered by the Chief Conservator of Forests, Nashik Circle.

All areas in this class will be isolated by means of fire lines and cut guidelines and will be patrolled by fire watchers.

Any fire occurring in them will be considered as a calamity and must be reported to the Deputy Conservator of Forests immediately on wireless and in writing giving the details of area burnt and the various types of losses occurred to the forest crop.

21.11.3 Class – II : Forest generally protected

(a) This class includes –

(1) The remaining areas of Improvement Working Circle.

(2) Such other areas as the Chief Conservator of Forests, Nashik Circle may for special reasons direct.

(b) All areas in this class will be isolated from the surrounding country by means of external fire lines.

(c) Fire watchers may be engaged for patrolling in this area if sanctioned by the Chief Conservator of Forests.

21.11.4 Class – III : Forests protected by law only :-

(a) All other forests not included in the above two classes, are included in this class.

(b) In forests of this class, deliberate burning is prohibited, buy no special measures of protection will be undertaken. The following lines will be maintained as fire lines and will be kept clear of all growth and kept clean of combustible material during the fire season.

(i) All external reserve forest boundary lines to a width of 12 meters.

(ii) 6 meter wide lines around all plantations up to 10 years from the year of planting.

(iii) 3 meter wide coupe lines which form the boundary between class I areas and areas of class II and III for a period of 10 years from the year of main felling.

(iv) 6 meter wide line on both sides of all roads and cart tracks passing through the forests.

(v) 40 meter wide line on all sides of the timber and fire wood depots.

21.11.5 <u>To reduce the possibility of forest fires following should be observed :-</u>

(i) The cutting and cleaning of fires lines should be completed by the end of December and burning should be completed by the end of December and burning should be completed before the end of February.

(ii) Dry leaves and other dry material on fire lines must be collected from time to time and deposited along the edge of the fire lines and burnt before the fire season starts. But the burning of such material on the fire lines after the hot weather has commenced, is strictly prohibited.

(iii)Except with the express order of the Deputy Conservator of Forests no fire lines shall be burnt after end of February. If such a permission is granted, the burning should be done in the presence of the R. F. O. at his risk and cost.

21.11.6 <u>Legal provisions available :-</u>

(A) <u>Provisions contained in the I. F. A. 1927 –</u>

The various legal provisions to protect the forest from fire are contained in the following sections of the Indian Forest Act. 1927. The following acts are prohibited

under these sections in the reserve forest areas or in areas notified under section 4 of the I. F. A. 1927 : -

(i) **Section 26(i) b** – to set fire to a reserve forests.

(ii) **Section 26(i) c -** kindling, keeping and carrying any fire except at such seasons as the forest officer may notify in this behalf.

(iii) **Section 26(f) f -** burning of any tree.

(iv) **Section 26(i) g -** burning of lime or charcoal..

(v) **Section 26(3) -** The State Government may suspend the exercise of all rights of pasture or to forest produce in the reserve forest/protected forest or a portion thereof whenever the fire is caused will fully or by gross negligence for such period as it thinks fit.

21.11.7 <u>(b) In case of village forest the following is the provision :-</u>

(vi) **Section 28 (3) -** All the above provisions apply in case of a village forest also.

21.11.8 <u>(c) **In protected forests the following are the provisions -**</u>

(vii) Any person who commits any of the following offences under section 33(i) (a), (b) (d) and (e) namely, burns any lime or charcoal contrary to prohibition under section 30, burns any lime or charcoal contrary to prohibition under section 30, sets fires to such forests or kindles a fire without taking all reasonable precautions to prevent its spreading on any tree reserved under section 30 and leaves burning any fire kindled by him in the vicinity of any such tree or closed portion under section 30, shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to two thousand rupees or with both. However the protected forests are under notification and if notified, they will also become a reserved forest.

21.11.9 (B) <u>Provisions contained in the Maharashtra Forests (Protection of Forests from fire) Rules 1982 :- /</u>

The Government to Maharashtra vide Notification No. 1074/252 359/F-6, dated 11.10.1982 under sections 32(6) and 76 (i) (d) of the I. F. A. 1927, made the rules for the protection of protected forests from fire called "The Maharashtra Forest (protection of forests from fire), Rule 1982". The various provisions made under rules 3 to 7 are given as under :-

Rule 3 :- A ban is placed on kindling fire within a distance of one kilometer from the boundary of the forest.

Rule 4 :- Under this rule any person desirous of clearing by fire any standing forest or grass land beyond a distance of one kilometer from the boundary of the forest shall observe the following rules .

(i) He shall clear a fire belt at least 10 meter wide on the side of the area which he proposes to burn which is nearest to the boundary of the forest in such a manner that no fire can spread across such belt.

(ii) He should keep a watcher to see that the fire does not spread in the forest area.

Rule 5 :- Under this rule any person desirous of burning "Rab" or clearing land by burning the growth on it near the forest boundary, should inform the nearest forest officer at least one week in advance of his intention to so do. A clean belt of at least 10 m. width should be left in between the boundary of the forest and the place where the rab is to be burnt so that the fire does not spread in the forest and while burning the rab he should make such arrangements so that the fire does not spread in the forest area.

Rule 6 :- Under this rule any person collecting inflammable forest produce such as grass, firewood, leaves, bamboos on land adjoining the forest land, and holder of a permit to collect such produce from the forest area, shall stack it in an open space at such reasonable distance from the forest as the Deputy Conservator of Forests may by general or special orders prescribe, and shall isolate the stacks in such manner that if they catch fire the fire shall not be able to spread to the surrounding areas of endanger the forests.

Rule 7 :- Under this rule all camping places along the boundary of and within the limits of the forest area will be cleared and will be set apart by the Deputy Conservator of Forests for the use of visitors. A list of all such camping places will be published annually and except on such camping grounds no fires shall be lighted within or along the boundary of the forest. All persons using these camping grounds shall light any fire they make for cooking or other purposes in such a way as not to endanger the forest or any buildings, sheds or other property on the camping grounds and before leaving they shall collect in the centre of the camping ground all inflammable material which is to be left behind and shall carefully extinguish all fires.

Rules 8 :- Rules 3 to 7 will be relaxed during the rainy season from 15th of June to 31st of October.

21.11.10 Provisions contained in the Bombay Forest Manual Vol.- II part - IV :-

(viii) **Rule 152** :- As per this rule the forest fire cases should not be compounded.

(ix) **Rule 153** :- It deals with the duties of the Magistrates dealing with forest fire offence cases.

(x) **Rule 157** :- It provides for the continuous protection of the valuable forests from fires.

(xi) **Rule 158** :- Under the provisions contained in this rule if the forest fire is serious and due to repeated neglect by the villager, then as an exception, a communal punishment can be given with the sanction of the Government.

(xii) **Rule 159** :- It deals with the duties of the village patel regarding protection of forests from fire.

(xiii) **Rule 160** :- It deals with the powers of the forest officers to sanction rewards in cases of effective fire protection.

(xiv) **Rule 162** :- It deals with the powers of the Commissioner to sanction rewards to the villagers for effective fire protection.

21.11.11 (B) Provisions for fire protection contained in the wildlife (Protection) Act.1972 :-

(xv) **Section 17 (i) (e)** – Under this section setting fire to any vegetation for hunting purposes is prohibited.

(xvi) **Section 27 (2) and (e) -** Every person so long as he resides in the sanctuary is bound to extinguish any fire in such sanctuary of which he has knowledge or information and also be will help the forest officer in extinguishing the fire.

(xvii) **Section 30 -** Setting fire to a sanctuary, or kindling any fire or to leave any fire burning, in a sanctuary by any person so as to endanger such sanctuary, is prohibited.

Wildlife in sanctuary, is banned.

(xviii) **Section 32 -** Use of explosive in a sanctuary by any person so as to cause injury or endanger any wildlife in sanctuary.

(xix) **Section 35 (8) -** Provision of section 27(2) (d) and (e), 30 and 32 apply in case of a National park also.

21.11.12 (B) Provisions contained under "The Maharashtra Minor Forest Produce (Regulation of Trade), 1969 :-

In the Agent's Agreement Form made under the provisions of the above Act a per the terms and conditions Nos. 6 (xix), (xxi), (xx), (xxi), (xxii) and 8, the Agents

appointed by the Government for collection of tendu leaves are responsible for any damage done to the forest by their negligence and they have to observe all rules, regulations and orders for the time being in force and made and issued under the Indian Forest Act. 1927. If any damage is done to the forest (which includes fire damage) it shall be assessed by the Deputy Conservator of Forests and his decision shall, subject to an appeal to the Conservator of Forests, be final, conclusive and binding on the Agent.

21.11.13 (B) Provisions contained in "The Maharashtra Felling of trees (Regulation) Act, 1964 :-

As per section 2 (e) of the above Act burning trees on private lands is include in the definition of "Felling of trees" and such act on the part of any person without obtaining felling permission from the competent authority under section 3, is punishable under section 4 of the above Act. The punishment to be done by the competent officer, may extend upto Rs. 1000/- besides the tree so felled is also liable to be forfeited to the Government. The government has designed Range forest Officer as Tree Officer under the amended Act.

21.11.14 (G) Protection of bamboo areas from fire after flowering

The rules and regulations to be followed for protection of bamboo areas from fire by the contractors are given in the draft agreement vide Revenue and Forest Deptt. No.V.M./D/1283/77 831/F1, dated 21.7.1983 and contained in the condition NOs. 41 (1) , 41 (2) and 41(3).

All men assisting in extinguish fires in Government forests shall be paid according to the amount of assistance rendered.

Responsibility -: The Range Forest Officer will be held personally responsible for the efficiency of fire protection in his range.

Where the forests of two ranges which are to be fire protected adjoin, the responsibility for efficient protection and clearing of common fire line will rest with one of the Range Forest Officer to be selected by the Deputy Conservator Of Forests. In cases of common boundary between two divisions of the same circle, the above responsibility will be fixed by the Conservator on one of the Range Forest Officer and in cases of the common boundary between two divisions of the two different circles, the concerned conservators after matual consultation, will fix the responsibility on one of the Range Forest Officer.

The Deputy Conservator of Forests will be held personally responsible for carrying out efficiently all protective and prohibitive in the areas under his contrtrol

in his division. If so directed, he may also carry out necessary fire measures in the areas adjoining to the Melghat Sanctuary and Gugamal National Park.

The Deputy Conservator of Forests must satisfy himself that the exterior fire lines and other fire lines as mentioned in the foregoing paras have been properly cleared and burnt thoroughly before the end of February. He must by continuous impactions enquire about the implementation of the various prohibitory orders and assure that

Sufficient protective staff is available to implement these orders. The Deputy Conservator Of Forest must visit the areas which is burnt every year. The areas prone to fire should be protected at all cost.

It has also been proposed that during the fire season starting from February-May , the D. C. F. and A. C. F. should stay at least twenty days in their jurisdiction to prevent fire. Vehicle of A. C. F. can provide a quick mobility.

Every year a monitoring of fire will be done by doing the visual interpretation of IRS LISS-II data of Mid May. The figures obtained from reports may then be compared.

CHAPTER -XXI

FINANCIAL FORECAST AND COST OF THE PLAN

SECTION 1: FINANCIAL FORECAST

22.1.1 The constant increase in rates of forest produce and wage rates , it is very difficult to forecast the reliable figures for future revenue and expenditure. However , an effort is being made to estimate approximate annual revenue and expenditure.The expected increase in rates of forest produce and wage rates from previous year to the next year has been taken as 10 % for the purpose of calculation. The proportion of teak and miscellaneous species in yield of timber has been taken as 80 :20 and the year 2016-17 as the mid year of the plan. On above basis calculations for revenue and expenditure have been made

22.1.2 REVENUE : The revenue for the year 2009-10 is 4547524/- the corresponding figure for the year 2012-13 comes to be Rs.6052753/- . An additional revenue is expected from yield of 250 m3 timber and 500 beats of firewood. The average rates for teak and miscellaneous species are Rs.53940/- and Rs. 5571/- for the year 2010-11. The corresponding figures for the year 2012-13 come to be Rs.65267/- and Rs.6714/- respectively . The rate for firewood has been taken as Rs. 784/- per beat. The additional revenue which is expected to come is Rs. 13782450/- The total estimated average revenue for the year 2012-13 is Rs.19835203/-. The projected figure of revenue for the year 2016-17 comes to Rs. 29040719/-. This will be the estimasted average annual revenue for the entire plan period.

22.1.3 EXPENDITURE: The estimated annual expenditures on various activities and items have been given in Table I & II. The total expenditure (On development works, harvesting works and on wages under non-plan) for the year 2016-17 in the tables taken together is Rs.556882000 (Rs.517210000 +Rs.3714000 +Rs.35958000), which is the average annual expenditure for the plan period. Annual establishment cost comes to be Rs.175495000/- (total non-plan expenditure for the year 2016-17 excluding wages.)

SECTION 2: FUTURE EXPENDITURE

23.2.1 Estimates of the annual expenditures on various activities prescribed in this plan have been calculated and are given by working circles in **Table –I and II**

SECTION 3 : COST OF THE PLAN

22.3.1 The total expenditure incurred on the preparation of this plan is Rs. 447.07 lakh.The cost of this plan works out to be Rs.359/- per hectare.

TABLE-I

EXPENDITURE ON DEVELOPMENT ACTIVITIES

Wage rate Rs. 60:40 for (2012-13)

DETAILS OF REGENERATION/DEVELOPMENT OPERATIONS AND EXPENDITURE ON THEM (RS.IN THOUSAND)												
Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11	12	13
Working Circle : Protection												
1	Preparation of Treatment Preparation of Treatment Map, 0.90 MD/ha Area = 1776.868ha.	October to Dec	367	404	444	488	537	591	650	715	787	865
2	Gully plugging & nalla bunding using locally available material (3.5 MD/ha Area= 1776.868ha.	October to March	0	1570	1727	1900	2090	2299	2529	2781	3059	3365
3	Cement nalla bunds of approved designed Area = 1776.868ha. @ 9 MDs / Ha. +M.S Rs.283 / ha. i.e' Rs. 2783/-	October to March	0	4495	4945	5439	5983	6581	7239	7963	8759	9635
4	Digging of countour trenches of size (2 x 0.60 x 0.30) , 100 running meter per hactare 50 % of 1776.868ha. = 888.434 Ha 12 MDs per Ha.	October to March	0	2691	2960	3256	3582	3940	4334	4767	5244	5768
5	Collection of Seed of local forest species and sowing by local staff (0.5 MD/ha. I.e.Rs. 104/ ha) Area=50 % 1776.868ha = 888.434 ha.	0	0	111	122	134	148	163	179	197	216	238
6	Fire tracing (7 M.D./Km , for 11.87 km.	December to February	19	21	23	25	28	31	34	37	41	45
7	Tending operations of rooted stock area / cleanning and stump dressing 50 % of total area 1776.868ha. = 888.434 Ha. 10 MD/ Ha	October to March	0	2243	2467	2714	2985	3284	3612	3974	4371	4808

1	2			3	4	5	6	7	8	9	10	11	12	13
8	Stump Plantation 5 % area OF 1776.868ha. =88.84				0	0	0	0	0	0	0	0	0	0
	Items	M.D./ha	M & S/ha		0	0	0	0	0	0	0	0	0	0
	S.D.& Tr. Map	0.90	0	October to Dec	18	20	22	24	26	29	32	35	39	42
	PPO	24.57	15.71	October to March	0	552	607	668	735	808	889	978	1076	1183
	FYO	218.89	8124.72	Apr to Nov	0	0	6058	6664	7330	8063	8870	9756	10732	11805
	SYO	167.20	1900.2	Jul to Oct	0	0	0	4691	5160	5676	6244	6868	7555	8310
	TYO	37.00	0	Jul to Oct	0	0	0	0	1164	1280	1408	1549	1704	1875
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006													
	Total of Protection W.C.				**404**	**12106**	**19375**	**26004**	**29768**	**32745**	**36019**	**39621**	**43583**	**47941**
	Working Circle : Improvement													
1	Fire tracing - For Forest Area 68.47 Kms @. 7 M.D./Km			December to february	110	121	133	146	161	177	195	214	236	259
2	Preparation of Treatment Map, 0.90 MD/ha Area = 2113 ha.			October to December	436	480	528	580	638	702	772	850	935	1028
3	(A)Area Category "A" 5 % of total area 106ha I) Stump Dressing & cleaning 10 MD/ha.			October to March	0	267	294	323	355	391	430	473	520	572
	ii) Gully plugging & Nalla bunding locally available material 3.5 MD/ha.			October to March	0	93	102	113	124	136	150	165	181	199
	iii) Sowing & Dibblig of seed 0.5 MD/ha.			April to June	0	14	15	16	18	20	22	24	27	29
	iv) Bamboo Planting 2 % of total area 2 ha.				0	0	0	0	0	0	0	0		0

1	2			3	4	5	6	7	8	9	10	11	12	13
	Items	M.D./ha	M & S/ha		0	0	0	0	0	0	0	0		0
	PPO	116.00	400	Oct to Mar	0	59	65	71	79	86	95	105	115	126
	FYO	83.00	2749	Apr to Nov	0	0	51	56	62	68	75	82	90	99
	SYO	57.00	900	Jul to Oct	0	0	0	36	40	44	48	53	58	64
	TYO	45.00	500	Jul to Oct	0	0	0	0	31	34	38	41	45	50
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006													
	(B) Area Category "B" 45 % of total area 2113.67 ha= 951 ha I) Cleaning & Stump dressing 10 MD/ha.			October to March	0	2401	2641	2905	3196	3515	3867	4254	4679	5147
	ii) Teak Plantation 10 % of 951.15ha.= 95.11 ha.													
	Items	M.D./ha	M & S/ha.											
	PPO	24.57	15.71	Oct to Mar	0	592	651	716	788	867	953	1049	1154	1269
	FYO	218.89	8124.72	Apr to Nov	0	0	6485	7134	7847	8632	9495	10444	11489	12637
	SYO	167.20	1900.31	Jul to Oct	0	0	0	5023	5525	6078	6686	7354	8090	8899
	TYO	37.00	--	Jul to Oct	0	0	0	0	1152	1267	1394	1533	1687	1855
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006				0	0	0	0	0	0	0	0	0	0
	(C) Area Category "c" 50 % of total area2113.67 ha= 1056.83ha I) Stump dressing &Cleaning 10 MD/ha.			October to March	0	2669	2936	3229	3552	3908	4298	4728	5201	5721
	Total of Improvement W.C.				**546**	**6695**	**13901**	**20350**	**23568**	**25925**	**28517**	**31369**	**34506**	**37956**
Working Circle : Fodder Management														
1	Preparation of Treatment Map, 0.90 MD/ha Area = 660.16ha.			October to Dec	136	150	165	181	199	219	241	265	292	0

1	2	3	4	5	6	7	8	9	10	11	12	13
2	TCM ,New : Repair, 20:80 @ 40mt/ha or @ 30MD/ha for new and @ 10 MD/ha for Repair AnnualArea=660.16ha	October to March	0	4333	4766	5243	5767	6344	6978	7676	8444	9288
3	Fire tracing work annual @.0.54 M.D./ha. Area = 5941.508 ha.	October to March	736	810	891	980	1078	1185	1304	1434	1578	1735
4	Type A 5% of 660.16ha =33ha.		0	0	0	0	0	0	0	0	0	0
	i) Gully plugging & Nalla bunding 3.5 MD/ha.	October to March	0	29	32	35	39	42	47	51	57	62
	ii) Preparation of WATs for 33ha 0.60 X 0.30 X 1 M @ 100Rmt/ ha12MD/ha	October to March	0	100	110	121	133	146	161	177	195	214
	iii) Collection of seed and sowing by staff 0.5 MD/ha.	Jan to June	0	5	5	5	6	7	7	8	9	10
	iv)Agave Planting on TCM Nursery cost & planting with transportation of 300 Agave/ha for33ha @ 2.4 MD/ha	October to June	18	20	22	24	26	29	32	35	39	42
5	Type B 85% of total area 660.16 ha. =561.13ha.		0	0	0	0	0	0	0	0	0	0
	i) Gully plugging & Nalla bunding 3.5 MD/ha.	October to March	0	370	407	448	492	542	596	655	721	793
6	i) Sloppy area 15% of 660.16 ha=99ha.		0	0	0	0	0	0	0	0	0	0
	250 trenches/ ha digging of size 4 X 0.60 X0.30 mts @0.36 MD per trenches किमान वेतन अधिनियमाप्रमाणे	December to July	0	2250	2475	2723	2995	3294	3624	3986	4385	4823
	ii)plain area 70 % of 660.16ha = 462.11ha.		0	0	0	0	0	0	0	0	0	0
	a) Digging of CCT 500 Rmts/ ha. Or 45MD/ha.	December to July	0	5262	5788	6367	7004	7704	8475	9322	10254	11280
	b) 25 raised beds of size 8 X 1.20 X 0.15 mts including sowing of grass seed & weeding to grass beds @ 58.50 MD per 100 beds + Rs. 2000 for M.S i.e. 4562Rs./ha.	December to July	0	1916	2108	2318	2550	2805	3086	3394	3734	4107

1	2	3	4	5	6	7	8	9	10	11	12	13
	1.Nursery cost for Tussocks Rs.230/1000 Including planting of tussocks 6 M.D. / 4166 महाराष्ट्र वानिकी प्रकल्प. Model No.4	October to June	335	369	405	446	490	540	593	653	718	790
7	Type C = 5 % 660.16Ha. = 33 Ha. Thining / Cleanning10 M.D. per Ha.		0	83	91	100	110	122	134	147	162	178
8	Type D 5% of 660.16Ha. = 33 Ha Cleanning 10 M.D. / Ha.		0	83	91	100	110	122	134	147	162	178
	Total of Fodder Management working circle		**1225**	**15778**	**17356**	**19091**	**21001**	**23101**	**25411**	**27952**	**30747**	**33501**
	Working Circle :Afforestation Working Circle											
1	Fire tracing - For Forest Area 80.50 Kms @. 7 M.D./Km	December to february	129	142	156	172	189	208	229	251	277	304
2	Preparation of Treatment Map, 0.90 MD/ha Area = 2213.18ha.	October to December	457	503	553	608	669	736	810	891	980	1078
3	Afforstation Area Type A 5 % of 2213.18ha.= 111ha.		0	0	0	0	0	0	0	0	0	0
4	SMC Works i) Gully plugging & Nalla bunding using locally available material 3.5 MD/ha.	October to March	0	98	108	119	130	143	158	174	191	210
5	ii) Collection of seeds of local species & sowing by staff 0.5 MD/ha.	January to June	13	14	16	17	19	21	23	25	28	31
6	Type B 94 % of 2213.18ha = 2080.38 ha		0	0	0	0	0	0	0	0	0	0
	Planting		0	0	0	0	0	0	0	0	0	0
	Items M.D./ha M & S/ha.											
	S.D.& Tr. Map 0.9	Oct to Dec	430	473	520	572	630	693	762	838	922	1014
	PPO 275.5	Oct to March	0	144729	159202	175122	192634	211898	233088	256396	282036	310239
	FYO 246.7	Apr to Nov	0	0	142560	156816	172498	189747	208722	229594	252554	277809

1	2			3	4	5	6	7	8	9	10	11	12	13
	SYO	77.96		Jul to Oct	0	0	0	49554	54509	59960	65956	72552	79807	87788
	TYO	26.32		Jul to Oct	0	0	0	0	18403	20243	22268	24494	26944	29638
	IV th year	15.6		Nov to March	0	0	0	0	0	11998	13198	14518	15969	17566
	Vth year	15.6		Nov to March	0	0	0	0	0	0	13198	14518	15970	17567
	ii) Gully plugging & Nalla bunding 3.5 MD/ha.			Oct to Dec	0	1839	2023	2225	2448	2692	2962	3258	3584	3942
	Type C 0.5 % of 2213.18ha = 11 ha area Cleaning= 10 MD/ha			October to March	0	28	31	34	37	41	45	50	55	60
	Type D 0.5 % of 2213.18ha = 11 ha area Cleaning= 10 MD/ha			October to March	0	28	31	34	37	41	45	50	55	60
	Total of Afforestation working circle				**1029**	**147854**	**305199**	**385273**	**442204**	**498422**	**561462**	**617608**	**679369**	**747306**
	WORKING CIRCLE : NTFP OVERLAPPING													
1	Traning & Data collection			April & March	160	176	194	213	234	258	283	312	343	377
	TOTAL				160	176	194	213	234	258	283	312	343	377
	WORKING CIRCLE : WILDLIFE OVERLAPPING													
1	Data Collection, Constructing new water-holes & exhibition of boards			April & March	91	100	110	121	133	147	161	177	195	215
	TOTAL				**91**	**100**	**110**	**121**	**133**	**147**	**161**	**177**	**195**	**215**
	WORKING CIRCLE :BAMBOO OVERLAPPING													
1	Improvement of existing bamboo in the forests			Oct & March	207	228	250	276	303	333	367	403	444	488
	TOTAL				**207**	**228**	**250**	**276**	**303**	**333**	**367**	**403**	**444**	**488**
	GRAND TOTAL				**3662**	**182937**	**356385**	**451328**	**517210**	**580929**	**652220**	**717442**	**789186**	**867784**

1	2	3	4	5	6	7	8	9	10	11	12	13
NON PLAN EXPENDITURE												
1	Wages (Maintenance, Buildings, Roads, Bridges1/5 th B'dary Demarcation)	April to March	24560	27016	29718	32689	35958	39554	43510	47860	52647	57911
2	Office Expenses	--//--	2986	3285	3613	3974	4372	4809	5290	5819	6401	7041
3	Petrol, Diesel	--//--	2912	3203	3524	3876	4263	4690	5159	5675	6242	6866
4	Material & Supply	--//--	2516	2768	3044	3349	3684	4052	4457	4903	5393	5933
5	Salary	--//--	100283	110311	121342	133477	146824	161507	177657	195423	214966	236462
6	T.E.	--//--	6239	6863	7549	8304	9135	10048	11053	12158	13374	14711
7	Misc.	--//--	4869	5356	5891	6481	7129	7842	8626	9488	10437	11481
TOTAL			**144365**	**158802**	**174682**	**192150**	**211365**	**232501**	**255751**	**281327**	**309459**	**340405**

TABLE -II

EXPENDITURE ON HARVESTING

DETAILS OF REGENERATION/DEVELOPMENT OPERATIONS AND EXPENDITURE ON THEM (Rs.IN THOUSAND)

Sr. No.	Activities/ Operations and Their Norms	Period of Working	YEARS									
			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
WORKING CIRCLE : PROTECTION												
NIL												
WORKING CIRCLE : FODDER MANAGEMENT												
NIL												
WORKING CIRCLE : AFFORSTATION												
NIL												
WORKING CIRCLE :IMPROVEMENT												
1	Demarcation of coupes Area= 2113.67ha. 0.5 M.D./ha.	April & May	242	266	293	322	354	390	429	472	519	571
2	Marking of coupes Area = 2113.67 ha. 0.5 M.D./ha.	September to November	242	266	293	322	354	390	429	472	519	571

1	2	3	4	5	6	7	8	9	10	11	12	13
3	Preparation of treatment maps 0.4 M.D./ha. Area= 2395.69 ha.	October & November	193	212	234	257	283	311	342	376	414	455
4	Coupe working- a) Timber- 250 cum. @ 7.7 M.D./cum b) Firewood - 500 beats @ 4.26 M.D./beat	December & March	0	1023	1125	1238	1362	1498	1648	1812	1994	2193
5	Wind Fallen a) Timber- 250 cum. @ 7.7 M.D./cum b) Firewood - 500 beats @ 4.26 M.D./beat	December & March	930	1023	1125	1238	1362	1498	1648	1812	1994	2193
TOTAL			**1607**	2791	3070	3377	3714	4086	4494	4944	5438	5982
WORKING CIRCLE : NTFP OVERLAPPING												
NIL												
WORKING CIRCLE : WILDLIFE OVERLAPPING												
NIL												
WORKING CIRCLE : BAMBOO OVERLAPPING												
NIL												
GRAND TOTAL			**1607**	**2791**	**3070**	**3377**	**3714**	**4086**	**4494**	**4944**	**5438**	**5982**

NOTE :

1.0 All notes except 1.0 given in Man Days calculation apply for Expenditure calculation as well.

2.0 The Wage rate of Rs.208.69 per day for the year 2011--12 has been used to calculate the expenditure for the different items of works of both Development and Harvesting .

3.0 The figures of Expenditure insucceeding years have been calculated by increasing 10 % in the figures for the previous years.

4.0 The expenditure shown in above Tables is in thousands. For e.g. figure of Rs.500 stands for Rs.500000.

5.0 Though all efforts have been made to find out the estimated expenditure on different operations suggested in the plan on the basis of the work norms and the prevailing rates, yet it is an estimated figure for the guidance of the division. For finding out the exact figures, every year detailed estimate shall be prepared taking the prevailing norms and rates.

CHAPTER-XXII

ESTABLISHMENT AND LABOUR

SECTION 1: ESTABLISHMENT

23.1.1 The details of staff have been given in chapter VI of part I of this plan. The existing ranges, rounds and beats are given in Appendix I.I.5. There are nine ranges in East Nashik Forest Division. As per the norms laid down by the Govt. of India, Ministry of Agricultural reorganisation of the division is not needed. The norm laid down for the constitution of the territorial divisions is based on forest protection. This norm is 500 to 1000 sq.km. for hilly terrain and 1000 to 1500 sq.km.for plain areas. Total forest area of East Nashik Forest Division is 135446.806 ha. which comprises mainly of plain areas, except forests of Surgana and Kalwan talukas.

SECTION 2 : LABOUR

23.2.1 Main activities of the Forest Department in East Nashik Forest Division are afforestation coupled with soil and moisture conservation works, nursery operations, grass cutting, forest protection, selective removal of overmature trees, collection of illicitly cut timber and firewood and its transportation to the depots. Out of these the more labour intensive activities are those related to afforestation, nursery activities and grass cutting. The Tribal population of the district is the main source of labour for these works.

On the whole supply of labour for forestry works is satisfactory. However, seasonal shortage of labour supply mainly during agricultural harvest season is felt. The forestry plantation season coincides with the agricultural season and therefore, during this period labourers are made available for forestry works with great persuation. Besides during important national and local festivals labours remain reluctant to work and this attitude continues for a few days even after festival is over and therefore , during this period also difficulties are felt in making labours available. However, this difficulty can be sorted out by importing labourers from outside during this period. Timely completion of pre-monsoon works and taking adequate risks by restoring to early dry planting of seedlings will also help to some extent.

The details of mandays to be created and labours required per day to execute the different activities prescribed in different working circles have been calculated for the years from 2012-13 to 2016-17 and the same have been given in Table No. I & II. The details of calculation made have been explained in the Table itself.

TABLE-I

MANDAYS ON DEVELOPMENT ACTIVITIES
Wage rate Rs. 60:40 for (2012-13)

DETAILS OF REGENERATION/DEVELOPMENT OPERATIONS AND MANDAYS TO BE GENERATED							
Sr. No.	Activities/ Operations and Their Norms	Period of working	YEARS				
			2012-13	2013-14	2014-15	2015-16	2016-17
1	2	3	4	5	6	7	8
Working Circle : Protection							
1	Preparation of Treatment Map, 0.90 MD/ha Area = 1776.868ha.	October to Dec	1599	1599	1599	1599	1599
2	Gully plugging & nalla bunding using locally available material (3.5 MD/ha.I.e.Rs.730.42/ha.) Area= 1776.868ha.	October to March	0	6220	6220	6220	6220
3	Cement nalla bunds of approved designed Area = 1776.868ha. @ 9 MDs / Ha. +M.S Rs.283 / ha. i.e' Rs. 2783/-	October to March	0	15993	15993	15993	15993
4	Digging of countour trenches of size (2 x 0.60 x 0.30) , 100 running meter per hactare 50 % of 1776.868ha. = 888.434 Ha 12 MDs per Ha.	October to March	0	10656	10656	10656	10656
5	Collection of Seed of local forest species and sowing by local staff (0.5 MD/ha. I.e.Rs. 104/ ha) Area=50 % 1776.868ha = 888.434 ha.	January to June	0	444	444	444	444
6	Fire tracing (7 M.D./Km , for 11.87 km.	December to February	83	83	83	83	83
7	Tending operations of rooted stock area / cleanning and stump dressing 50 % of total area 1776.868ha. = 888.434 Ha. 10 MD/ Ha	October to March	0	8880	8880	8880	8880

8	Stump Plantation 5 % area OF 1776.868ha. =88.84				0	0	0	0	0
	Items	M.D./ha	M & S/ha		0	0	0	0	0
	S.D.& Tr. Map	0.90	0	October to Dec	80	80	80	80	80
	PPO	24.57	15.71	October to March	0	2183	2183	2183	2183
	FYO	218.89	8124.72	Apr to Nov	0	0	19446	19446	19446
	SYO	167.20	1900.2	Jul to Oct	0	0	0	14854	14854
	TYO	37.00	0	Jul to Oct	0	0	0	0	3287
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006								
	Total of Protection W.C.				**1762**	**46138**	**65584**	**80438**	**83725**
Working Circle : Improvement									
1	Fire tracing - For Forest Area 68.47 Kms @. 7 M.D./Km			December to February	476	476	476	476	476
2	Preparation of Treatment Map, 0.90 MD/ha Area = 2113.67 ha.			October to December	1903	1903	1903	1903	1903
3	(A)Area Category "A" 5 % of total area 2113.67 ha = 106 ha I) Stump Dressing & cleaning 10 MD/ha.			October to March	0	1060	1060	1060	1060
	ii) Gully plugging & Nalla bunding locally available material 3.5 MD/ha.			October to March	0	371	371	371	371
	iii) Sowing & Dibblig of seed 0.5 MD/ha.			April to June	0	53	53	53	53
	iv) Bamboo Planting 2 % of total area 106 ha =2 ha.				0	0	0	0	0
	Items	M.D./ha	M & S/ha		0	0	0	0	0
	PPO	116.00	400	Oct to Mar	0	232	232	232	232
	FYO	83.00	2749	Apr to Nov	0	0	166	166	166

	SYO	57.00	900	Jul to Oct	0	0	0	144	144
	TYO	45.00	500	Jul to Oct	0	0	0	0	90
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006								
	(B) Area Category "B" 45 % of total area 2113.67 ha= 951 ha I) Cleaning & Stump dressing 10 MD/ha.			October to March	0	9510	9510	9510	9510
	ii) Teak Plantation 10 % of 951 ha.= 95 ha.								
	Items	M.D./ha	M & S/ha.						
	PPO	24.57	15.71	Oct to Mar	0	2334	2334	2334	2334
	FYO	218.89	8124.72	Apr to Nov	0	0	20795	20795	20795
	SYO	167.20	1900.31	Jul to Oct	0	0	0	15884	15884
	TYO	37.00	--	Jul to Oct	0	0	0	0	3515
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006				0	0	0	0	0
	(C) Area Category "c" 50 % of total area2113.67 ha= 1057 ha I) Stump dressing &Cleaning 10 MD/ha.			October to March	0	10570	10570	10570	10570
	Total of Improvement W.C.				**2379**	**26509**	**47470**	**63498**	**67103**
Working Circle : Fodder Management									
1	Preparation of Treatment Map, 0.90 MD/ha Area = 660.16 ha.			October to Dec	594	594	594	594	594
2	TCM ,New : Repair, 20:80 @ 40mt/ha or @ 30MD/ha for new and @ 10 MD/ha for Repair Annual lArea=660.16 ha			October to March	0	9240	9240	9240	9240
3	Fire tracing work annual @.0.54 M.D./ha. Area = 5941.508 ha.			October to March	3209	3209	3209	3209	3209
4	Type A 5% of 660.16 ha = 33.008 ha.				0	0	0	0	0
	i) Gully plugging & Nalla bunding 3.5 MD/ha.			October to March	0	116	116	116	116

	ii) Preparation of WATs for 33 ha 0.60 X 0.30 X 1 M @ 100Rmt/ ha 12MD/ha	October to March	0	396	396	396	396
	iii) Collection of seed and sowing by staff 0.5 MD/ha.	Jan to June	0	17	17	17	17
	iv)Agave Planting on TCM Nursery cost & planting with transportation of 300 Agave/ha for 33 ha @ 2.4 MD/ha	October to June	79	79	79	79	79
5	Type B 85% of total area 660.16 ha. = 561.13 ha.		0	0	0	0	0
	i) Gully plugging & Nalla bunding 3.5 MD/ha.	October to March	0	1964	1964	1964	1964
6	i) Sloppy area 15% of 660.16 ha= 99.02 ha.		0	0	0	0	0
	250 trenches/ ha digging of size 4 X 0.60 X0.30 mts @0.36 MD per trenches किमान वेतन अधिनियमाप्रमाणे	December to July	0	8910	8910	8910	8910
	ii)plain area 70 % of 660.1 ha = 462.12 ha.		0	0	0	0	0
	a) Digging of CCT 500 Rmts/ ha. Or 45MD/ha.	December to July	0	2079	2079	2079	2079
	b) 25 raised beds of size 8 X 1.20 X 0.15 mts including sowing of grass seed & weeding to grass beds @ 58.50 MD per 100 beds + Rs. 2000 for M.S i.e. 4562 Rs./ha.	December to July	0	6757	6757	6757	6757
	1.Nursery cost for Tussocks Rs.230/1000 Including planting of tussocks 6 M.D. / 4166 महाराष्ट्र वानिकी प्रकल्प Model No.4	October to June	1902	1902	1902	1902	1902
7	Type C = 5 % 660.16 Ha. = 33.08 Ha. Thining / Cleanning10 M.D. per Ha.		0	330	330	330	330

8	Type D 5% of 660.16 /ha. = 33.08 ha. Cleanning 10 M.D. / Ha.			0	330	330	330	330
	Total of Fodder Management working circle			**5784**	**35923**	**35923**	**35923**	**35923**
Working Circle :Afforestation Working Circle								
1	Fire tracing - For Forest Area 80.50 Kms @. 7 M.D./Km		Dec to february	564	564	564	564	564
2	Preparation of Treatment Map, 0.90 MD/ha Area = 2213.18 ha.		October to December	1992	1992	1992	1992	1992
3	Afforstation Area Type A 5 % of 2213.18 ha.= 111ha.			0	0	0	0	0
	SMC Works i) Gully plugging & Nalla bunding using locally available material 3.5 MD/ha.		October to March	0	389	389	389	389
	ii) Collection of seeds of local species & sowing by staff 0.5 MD/ha.		January to June	56	56	56	56	56
	Type B 94 % of 2213.18 ha = 2080.38 ha			0	0	0	0	0
	Planting			0	0	0	0	0
	Items	M.D./ha	M & S/ha.					
	S.D.& Tr. Map	0.90		October to Dec	1872	1872	1872	1872	1872
	PPO	275.50		October to March	0	573040	573040	573040	573040
	FYO	246.70		Apr to Nov	0	0	513136	513136	513136
	SYO	77.96		Jul to Oct	0	0	0	162157	162157
	TYO	26.32		Jul to Oct	0	0	0	0	54746
	IV th year	15.60		Nov to March	0	0	0	0	0
	Vth year	15.60		Nov to March	0	0	0	0	0
	ii) Gully plugging & Nalla bunding 3.5 MD/ha.			October to March	0	7280	7280	7280	7280
	Type C 0.5 % of 2213.18 ha = 11 ha area Cleaning= 10 MD/ha			October to March	0	110	110	110	110

	Type D 0.5 % of 2213.18ha = 11 ha area Cleaning= 10 MD/ha	October to March	0	110	110	110	110
	Total of Afforestation working circle		**4484**	**585413**	**1098549**	**1260706**	**1315452**
DETAILS OF MANDAYS							
Sr. No.	**Activities/ Operations and Their Norms**	**Period of Working**	**YEARS**				
			2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**
WORKING CIRCLE : NTFP OVERLAPPING							
1	Traning & Data collection	April & March	700	700	700	700	700
	TOTAL		700	700	700	700	700
WORKING CIRCLE : WILDLIFE OVERLAPPING							
1	Data Collection, Constructing new water-holes & exhibition of boards	April & March	400	400	400	400	400
	TOTAL		400	400	400	400	400
WORKING CIRCLE :BAMBOO OVERLAPPING							
1	Improvement of existing bamboo in the forests	Oct & March	900	900	900	900	900
	TOTAL		900	900	900	900	900
NON PLAN							
1	Wages (Maintenance, Buildings, Roads, Bridges1/5 th B'dary Demarcation)	April to March	106991	106991	106991	106991	106991
TOTAL			106991	106991	106991	106991	106991
TABLE –II							
MANDAYS FOR HARVESTING							
DETAILS OF HARVESTING OPERATIONS AND MANDAYS TO BE GENERATED							
Sr. No.	**Activities/ Operations and Their Norms**	**Period of Working**	**YEARS**				
			2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**
WORKING CIRCLE : PROTECTION							
NIL							
WORKING CIRCLE : FODDER MANAGEMENT							
NIL							
WORKING CIRCLE : AFFORSTATION							
NIL							
WORKING CIRCLE :IMPROVEMENT							
1	Demarcation of coupes Area= 2113.67ha. 0.5 M.D./ha.	April & May	1057	1057	1057	1057	1057

2	Marking of coupes Area = 2113.67 ha. 0.5 M.D./ha.	September to November	1057	1057	1057	1057	1057
3	Preparation of treatment maps 0.4 M.D./ha. Area= 2395.69 ha.	October & November	846	846	846	846	846
4	Coupe working- a) Timber- 250 cum. @ 7.7 M.D./cum b) Firewood - 500 beats @ 4.26 M.D./beat	December & March	0	4055	4055	4055	4055
5	Wind Fallen a) Timber- 250 cum. @ 7.7 M.D./cum b) Firewood - 500 beats @ 4.26 M.D./beat	December & March	4055	4055	4055	4055	4055
TOTAL			**7015**	**11070**	**11070**	**11070**	**11070**
WORKING CIRCLE : NTFP OVERLAPPING							
NIL							
WORKING CIRCLE : WILDLIFE OVERLAPPING							
NIL							
WORKING CIRCLE : BAMBOO OVERLAPPING							
NIL							
GRAND TOTAL			**7015**	**11070**	**11070**	**11070**	**11070**

NOTE :

1.0Mandays to be generated and labours required per day to complete the work do not change year after year & therefore, the figures for both Mandays generated and labours required per day will remain the same for another 5 years .Hence they have not been repeated here.

2.0 Figures for Mandays have been calculated on the basis of the norms given.

3.0 In Improvement working circle and afforestation total area of the working circle & felling cycle of 20 years have been taken to find out M.D.

4.0 In Fodder Management Working Circle, a period of 9 years & for Protection W.C. a period of 10 years have been taken to cover the entire area of the working circle and accordingly M.D. have been calculated

5.0 In overlapping Working Circle, lumsum amount and Mandays have been taken for the requisite developmental works.

6.0 Working norms have been taken from old working plans and the prevailing rates used by the East Nashik Forest Division.

7.0 All efforts have been made to find out M.D. as near as the actual, however, this is an estimated figure given for the guidance to the division. For finding out the exact figures every year, detailed estimate should be prepared taking the prevailing norms.

CHAPTER-XXIII

CONTROL AND RECORDS

SECTION I : CONTROL FORMS :

24.1.1 The record of all the harvesting operations, silvicultural, regeneration and SMC works in each working circle will be maintained in control forms. Three sets of control forms will be prepared in working plan office. One set of control forms will be retained by working plan circle and one set will be distributed to CCF territorial and DCF East Nashik each. The DCF East Nashik will annually make entries in his copy of control forms and send them together with deviation statement in triplicate to CCF working plan through territorial CCF. After the entries have been checked and approved, the working plan CCF will first get his copy completed and then send the DCF's copy to territorial CCF. The later will then complete his copy and finally return the DCF's copy for next year. The working plan CCF will send three copies of deviation statement to PCCF for sanction. After the sanction, one copy each will be sent to territorial CCF and DCF for their record and working plan CCF will retain the third copy. The control forms should be submitted by the DCF to territorial CCF by end of November. The latter then send them to working plan CCF before January each year. The format of the control forms is given in **appendix II, XV-1 to 6**.

SECTION 2 : COMPARTMENT HISTORIES :

24.2.1 The record of all the forestry activities under taken and observations made in the field will be maintained in form no. 1 to 5 as given below. The format of the forms is given is **Appendix.**

Form No. 1 Description of the compartment

Form No. 2 Compartment enumeration

Form No. 3 Trees marked for felling

Form No. 4 Compartment out-turn

From No. 5 Compartment history

Each compartment will have a separate record file. The record of history will be maintained by the divisional office. The important information such as felling, subsidiary silvicultural operations, plantations, fire incidences, grazing etc. will be recorded. Every year in the month of July, RFO will fill-up the information and send it to DCF East Nashik. The concern ACF will scrutinize the record and sign it. One copy of it will be sent to RFO. The second copy of it will be retained in the divisional office. Chief Conservator of Forests,

Working Plan, will be sent duly updated compartment history forms in the month of August every year.

SECTION 3: PLANTATION AND NURSERY REGISTERS:

24.3.1 Plantation registers will be maintained for all the plantations in the standard format given in **appendix II,XV-4.** Similarly nursery register will be maintained for each nursery in the standard format given in **appendix II XV-5**.

SECTION 4: DIVISIONAL JOURNAL:

24.4.1 DCF East Nashik will maintain a divisional journal which will include the matters of divisional importance. A record of all the plantations, auction results, grazing, fires in regenerated areas, new building constructed, gregarious flowering of bamboo and major attack of insects on the forest crop will be maintained in this journal. The format of the journal is given in **appendix II XV-6**.

CHAPTER-XXIV

SUMMARY OF PRESCRIPTIONS

SECTION 1: INTRODUCTION

The East Nashik Forests division comprises of nine ranges which are Dindori, Kalwan, Kanashi, Deola, Surgana, Umberthan, Chandwad, Nandgaon, and Yeola. Most of the area of this division lies in Western Ghats. The total forest area of the division is 135379.56 ha , out of which reserve forest is 133062.599 ha, protected forest is 1938.333 ha and unclassed forest is 445.874 ha. The possession of 11077.849 ha forest area is with FDCM and 895.898 ha forest area still vests with Revenue department. Therefore, the net area with division for management purpose is 123473.059 ha. The forest of this division belongs to southern tropical moist deciduous, dry deciduous and thorn forest categories.

SECTION 2: PAST SYSTEM OF MANAGEMENT

The forest of East Nashik division was divided into two parts i.e. Above Ghat forest and Surgana forest for the sake of management. The first working plan for Above Gat forest was prepared by Shri. J. Dodgson for the period 1906 - 07 to 1935 - 36. It was the first working plan which brought the entire forest area under systematic management. The main silvicultural system adopted in the working plan was coppice with standards. Certain numbers of straight, sound teak and injaili trees in each area were reserved as standards and remaining crop was clear felled with a felling cycle of 30 years. The entire area was treated with only one silvicultural system irrespective of the requirement of the crop. The standards retained were of poor quality and over mature. As a result, the prescriptions of the working plan did not help in improving the percentage of teak in the worked areas.

After Dodgson's plan expired, H. W Starte prepared the plan for the above ghat forest for the period 1936 - 37 to 1980 - 81. In this plan the forest areas was divided in to five working circles which were as follows.

1. Teak Working Circle
2. Scrub Working Circle
3. Sandal Wood Working Circle
4. Kuran Working Circle
5. Miscellaneous Working Circle.

In this working plan, under stocked areas were included in teak and scrub working circles for regeneration after their clear felling. But it could not be regenerated due to poor and degraded

site conditions. In certain cases clear felling was done on the steep slopes also, but these areas could not be regenerated successfully. Sometime the artificial plantations could not be taken on entire area which was clear felled. The silvicultural system adopted for teak plantations was also not very successful. As a result, the stocking of forest could not improve. Grazing without any regulation was permitted in both cutting and grazing kurans. The agro- forestry system prescribed for kurans was also not successful. The prescriptions in respect of artificial regeneration of sandalwood were also not carried out completely.

This working plan was further revised for Above Ghat forest by Shri. J. H. Sankhe for the period 1981 - 82 to 1995 - 96. In this working plan, the forest area was divided in to following working circles.

1. Protection Working Circle
2. Plantation Working Circle
3. Afforestation Working Circle
4. Pasture Working Circle
5. Kuran Working Circle.

Afforestation activities on large scale were prescribed in Sankhe's Plan and accordingly plantations under various schemes were undertaken during that period. However, the model of afforestation suggested in the Working Plan was not followed at most of the plantation sites. Plantations were raised from different sources of funds such as District Plan, EGS, D.P.A.P, M.A.P., Maharashtra Forestry Project, Western Ghats Development Programme etc. Therefore the sequence prescribed in the plan was also not followed.

Sankhe's Plan did not cover forest areas of Kalwan, Satana and Chandwad ranges. These areas were covered separately under Girna River Valley Project Plan. But this Plan could not be implemented.

SURGANA FOREST:

These forests were managed by ex-estate ruler till December 1948. After abolition of estates, these forests were constituted as reserved forest in the year 1963. Prior to the merger of the estate, these forests were managed with an objective to have maximum revenue. This standing crop was sold taking village as a unit. After constituting these estate forests into Reserved Forests in the year 1963, it was felt desirable to bring all these Below Ghat forests under the purview of a single working plan. Hence, these areas were put under a single Working Plan (1967-68 to 1982-83) for Surgana Forests prepared by Shri. A.R. Moon.

All the forest areas of Surgana were systematically stock-mapped for the first time during the preparation of this working plan. Following working circles were constituted:

i) Protection Working Circle
ii) Conversion Working Circle
iii) Miscellaneous Working Circle
iv) Miscellaneous Plantation Working Circle
v) Khair Overlapping Working Circle
vi) Bamboo Overlapping Working Circle
vii) Protected Forest Working Circle

The first consolidated working plan, covering the entire area of the division i.e. Above Ghat forests and Surgana forests was prepared by Shri. B.P.Singh, D.Y.Deshmukh and A. K. Mishra for the period of 2002-03 to 2011-12. The following working circles were constituted in this plan.

(i) Protection Working Circle
(ii) Afforestation Working Circle
(iii) Improvement Working Circle
(iv) Kuran Working Circle
(v) JFM (overlapping) Working Circle
(vi) Wildlife (overlapping) Working Circle
(vii) NTFP (overlapping) Working Circle
(viii) Bamboo (Overlapping) Working Circle

SECTION 3: FUTURE MANAGEMENT

The general objects of the management are as follows :

1. To conserve and improve the bio-diversity and composition of the growing stock through various silvicultural operations.
2. To tend and help the natural regeneration to establish through various silvicultural operations.
3. To manage the old plantations by using various tending and cleaning operations.
4. To increase the stocking of various NTFP species in the forest to enhance their productivity along with improvement in management and collection techniques.
5. To improve the habitat for wildlife by augmenting the supply of water and food.
6. To increase the productivity & production of fodder by introducing high quality grasses and thereby meeting its demand for the local people.

7. To restock all under-stocked and degraded areas through plantations involving active participation of local people.
8. To meet the demand of the local people for forest produce to the maximum possible extent
9. To protect and conserve the vegetative and soil cover on steep slopes and catchments of watersheds.

Keeping in view the objects of management, the forest area of this division has been divided into following working circles.

Sr. No.	Working Circle	Area allotted (ha.)	Percentage of area allotted
1	Protection W. C.	17768.686	14.29 %
2	Improvement W. C.	42273.419	33.98 %
3	Afforestation W. C.	44263.705	35.59 %
4	Fodder Management W. C.	5941.508	4.78 %
5	Miscellaneous W. C.	14124.659	11.36 %
6	Wildlife (Over lapping) W.C.	124371.977	100 %
7	Joint Forest Management(Overlapping W. C).	124371.977	100 %
8	Forest Protection (Over Lapping) W. C.	124371.977	100 %
9	NTFP(Over lapping) W.C.	124371.977	100 %
10	Bamboo (Overlapping) W.C.	5627.391	4.52 %

SECTION 4: TREATMENT PRESCRIBED UNDER VARIOUS CIRCLES

PROTECTION WORKING CIRCLE: The forest areas having more than 25^0 slopes, highly eroded and rocky outcrop areas have been allotted to this working circle. The total area allotted to this working circle is 17768.686 hectares which constitutes 14.29 % of the total forest area. No harvesting of any type including the dead and dying trees will be undertaken in this area as it may increase the incidence of soil erosion. However, wind fallen material will be removed from the accessible areas if it is economically viable. Suitable soil and moisture conservation works like gully- plugging, nallas- bunding etc will be under taken at appropriate places to prevent the soil erosion. Seed-dibbing of the local species will be done in blank patches to suitably clothe the area. Root suckers of Dalbergia sissoo, Dalbergia latifolia, Dalbergia paniculata, Dalbergia lanceolaria and stereospermum personatum bombax ceiba will be encouraged at places having good soil depth. Contour trenches of size 2.00 m X 0.60 m X 0.30 m shall be dug along the periphery of the above species existing in the nearby areas or wherever available in the division so as to get root suckers. It will be

done in the beginning of the rainy season in order to regenerate the small blank patches. Bamboo will be planted in the accessible under stocked areas along the water courses wherever it is feasible. If any area of this working circle falls under J.F.M., it will be treated as per the broad prescriptions of this working circle only. Bush sowing of seeds of suitable species like Neem, Maharukh, Khair, Sandalwood, Bamboo etc. shall be carried out. No cutting operations other than fire tracing for a minimum period of 3 years shall be done.
Stump plantation of teak & sissoo may be taken up over an area more than 2 hectares in extent where there is good deposition of soil.

The complete forest area of this working circle will be strictly protected from forest fires. Village forest protection committees formed in the vicinity of this area will be sensitized in this regard. A comprehensive fire fighting scheme shall be prepared to protect this area from forest fires.

The forest area will be completely closed for grazing. Otherwise it will render all the efforts of regeneration as futile.

All the efforts will be made to protect forest area from illicit felling, tahal cutting and encroachments.

If any area of this working circle is allotted to village protection committee under JFM or FDA, it will be treated as per the prescriptions and special objects of managements of this working circle.

IMPROVEMENT WORKIG CIRCLE: All the areas having young to middle aged crop which require improvement through silvicultural operations are allotted to this working circle. The tree enumeration data shows that there are 164.83 trees per hectare above 15 cm girth in this working circle. The total area allotted to this working circle is 42273.419 ha which constitutes 33.98% of the total area allotted to this working circle. The object of management of this working circle is to enrich and improve the composition of growing stock through various silvicultural operations, plantations and SMC works. The natural regeneration will be tended and supplemented with artificial regeneration wherever required. The improvement cycle has been fixed as 20 years. To meet the objectives of this working circle, the area will be divided in to 4 categories.

1. Protection areas: The following types of areas will be included in it.

(a) All areas having steep and precipitous slope i.e. slope more than 25^0.

(b) Heavily eroded and rocky areas.

(c) Twenty meters wide strip on either side of the permanent water course (a water course having water till January).

2. Well stocked areas: All types of areas having crown density more than 0.4 with a minimum extent of 0.25 ha. It will also include the good patches of advance growth.

3. Old plantation areas: It will include all the patches of successful old plantations which has been included in Working Plan of Old Plantation Management (overlapping) Working Circle and will be dealt as per the prescription of that working circle .It also includes 2043.485 ha. area of plantations raised in the Division during the period of last Working Plan. These plantations will be thinned as per the thinning regime prescribed in that overlapping working circle. No operation will be carried out under this working circle. The location of these plantation has been shown on maps provided with this Working Plan.

4. Under stocked areas : All remaining areas including the blank areas having good soil depth, where the crown density is less than 0.4 will be included here. The crown density 0.4 has been defined as in an imaginary cluster of 4 trees where 2 trees are required to close the canopy or if 3 trees are required to close the canopy , it will be referred as crown density 0.2 .It will also include the patches of failed plantations, not included in Area C.

Treatment for each category of the areas will be as follows:

Treatment for area 'A':

1. No live tree shall be marked for felling.
2. These areas have steep and precipitous slope. Therefore, most of the rainwater goes as run-off from this area. To arrest the run-off water and to raise the underground water table, suitable soil and moisture conservation works , such as gully plugging, nalla bunding, bandharas, bhoomigat bandharas etc. will be taken up. It will help in the establishment of the young regeneration also and provide water to the wildlife after rainy season.
3. No plantation will be carried out in this area. However, seeds of local suitable species will be dibbled in the accessible under stocked areas having good soil depth. In the blank areas, root suckers of Dalbergia sissoo, Dalbergia latifolia, Dalbergia paniculata, Dalbergia lanciolata ,Stereospermum personatum, Aegle marmelos and Bamboo ceiba will be encouraged by digging roots of tree around it. Bulbils of agave will also be planted to clothe the blank areas and prevent soil erosion. Cutting of Vitex negundu will be planted in the area. Similarly the cutting of Tinospora cordifolia , will be affixed on the tree at a height of 2 meters to promote its growth . Bush sowing of seeds of suitable species like neem, khair, babul, semal, maharukh, sandalwood, etc. shall be carried out just before the onset of monsoon .No cultural operations other than fire tracing for a minimum period of 3 years shall be done. Bamboo will be planted in accessible under stocked area within 20 meters wide strip

on either side of water course. Khus grass will be planted on the banks, having clayey soil to provide stability to banks .

4. Any patch having good natural regeneration will be identified and given the treatment as prescribed at the end of the chapter.

Treatment for area 'B':

1. The multiple coppice shoots of teak shall be reduced to two coppice shoots per stool as farther as possible. The vigorous shoots will be retained and rest of coppice shoots shall be removed. While doing retention , the side shoots shalll be preferred .

2. All dead and diseased trees shall be removed . Dead trees will include trees dead upto 1/3 of its top height, from the top.

3. The congested pole crop in the area will be thinned out and thinning will be done in favour of teak. The thinning will be such that the adjacent pole is at 1/3 distance of its height .

4. No edible fruit tree will be cut.

5. The bushes that are likely to interfere with the proper growth of coppice seedlings will be removed.

6. All climbers will be cut , other than that having medicinal value .The list of climber species to be retained is given in Appendix I-II-1. .

7. All pollarded trees which have not thrown shoots , will be flushed to the ground , but before flushing to the ground, an inventory of such stumps shall be preferred . The stools will be singled into two straight shoots .If two straight shoots are not available , one good shoot will be retained ..

Treatment for area 'C': This area includes old plantations which are successful and have been marked on the maps provided by the Working Plan Division . The area will be thinned according to the prescriptions given in the Working Plan for Old Plantation Working Circle .These areas will be worked according to thinning regime provided in that overlapping working circle . No prescription has been has been provided for them in this Working Circle except for referring there . The coupe control form will only record the year of its working and nature of operation done in it, under Old Plantation Management (overlapping) Working Circle .

Treatment for area 'D' : It includes the remaining area with crown density less than 0.4 and that has not been included in above three categories.

1. All the dead and malformed poles shall be marked first for thinning.
2. Undesirable under growth which is interfering with the development of the seedlings of seed origin will be removed.
3. The multiple poles shall be reduced to two healthy poles per stool.

4. In case of choice within the congested crop, the poles of the coppice origin will be removed whereas the poles of seed origin will be retained.
5. All high stumps with no shoots, shall be flushed to the ground with a sharp axe, to get vigorous coppice shoots, otherwise the singling of shoots will be done.. A separate inventory of such high stumps flushed to the ground will be maintained.

The natural regeneration will be tended again to provide better growing conditions for it. All multiple shoots will be cut back and reduced to two shoots per stool. Strict fire protection will be provided to the improvement coupe for a period of five years. All the cut material of bushes, branches and dry leaves will be cleaned by the end of February, to protect it from the fire hazard. Fire lines will be cleared and burnt under strict controlled conditions. A special care will be taken to protect the promising natural regeneration. Village forest protection committees will be geared up and assigned the responsibility of protecting these coupes. The annual improvement coupes will be strictly closed for grazing for a period of five years after their working. If any area of this working circle is allotted to JFM or FDA committee, all the operations will be carried out as per the prescription of this working circle.

AFFORESTATION WORKIG CIRCLE : This working circle includes the blank and under stoked areas having crop density less than 0.40. The area included in this working circle is 44263.705 ha. which makes it 35.59 % percent of the total area. The object of this working circle is to increase the vegetal cover and productivity of the land. The working cycle has been fixed as 20 years. For the sake of treatment, the whole area of this working circle will be divided into 4 parts.

A Protection Areas: This will include following types of areas.

(i) Areas having slope more than 25^0

(ii) All the heavily eroded areas, rocky patches and refractory areas not suitable for plantation.

(iii) Twenty meters strip on either side of the permanent water courses.

B Under Stocked Areas: All the areas having crop density less than 0.40 will be included in this category.

C Pole Crop and Old Plantation Areas: The successful old plantations and natural growing pole crop of desired species which can be retained as a future crop will be included in it. However the silvicultural operation in these plantations will be carried out as per the provisions listed in Old Plantation (overlapping) Working Circle. No operation will be

carried out under this Working Circle, The coupe control form will only state the work done under Old Plantation Management (overlapping) Working Circle in specified year.

D Well Stocked Areas: It will include all the areas having crop density more than 0.4.

Treatment for each category of the areas will be as follows:

Treatment for Area 'A': The following types of treatments will be carried out in this area.

(i) All these areas are either on steep slopes or are highly eroded, hence no green tree will be felled in this category.

(ii) Suitable SMC works such as nalla bunding, gully plugging, gabbian structure, retaining wall etc will be taken up in this area. In highly eroded and refractory areas where loose boulders are available, bunding of loose boulders along the contour line will be made at a gap of 20 metres to prevent further soil erosion. This will be strengthened by planting the Agave bulbils and cuttings of nirgudi (Vitex negundo) in the soil deposited in front o f loose boulder bunds in the second year.

(iii) Seeds of local pioneer species like semel, lendia, tiwas, maharukh will be dibbled in accessible areas having good soil depth. Bulbils of Agave and cuttings of ficus species in moist areas as mentioned in Chapter of Working Plan for Protection Working Circle, will be planted in suitable blank areas to clothe the soil and prevent further soil erosion. The root suckers will be promoted, in the manner mentioned in chapter of Working Plan for Improvement Working Circle.

Treatment for Area 'B': These are the understocked areas, where mainly the plantation activity will be taken up. The suitable model of plantation will be selected as per the site conditions. The area will be divided into three zones i.e. I, II, III depending upon the depth of soil. The various activities of afforestation and SMC works will be carried out, as per the zone and model of plantation. The list of various plantation models is given in the **Appendix Table-1 or Part-II Appendix No.II.XII-1**.

The different operations of plantation will be carried out as per the sequence given below.

Planting of difficult areas – Few posts of RFO (EGS) has been sanctioned in East Nashik Forest Division and they will be assigned the difficult plantable areas to afforest, like the hill slopes, plateaus etc. The annual target shall be fixed for them by the DCF East Nashik Division to the extent of efforts involved. These area will require a different choice of species, which may include Acacia tortalis, Dolichandrone falcata , Azadirachta indica (if the rainfall is less), Acacia ferruginea, Cordia myxa, Sterculia urens, Prosopis spicigera, Hardwickia binata, Albizzia amara, Azardirachta indica, Acacia catechu, Acacia leucophloea, Buchanania lanzan ,Boswellia serrata, Ficus arnottiana, Prosopis spicigera, Zizyphus

xylophyra, Bauhinia recemosa etc. Few of these species have a prominent taproot system. Tall seedlings of these species with good developed root system will be planted in the pit preferably with a changed soil from the nearby nalla. The list of compatable species for different type of soils is given in the Appendix II.XII.2.This may make survival more effective The necessary soil conservation measures will also be taken up in the area to conserve soil. The planting model will be the standard model adopted for such area. In the area, having good soil, the deep CCT of one meter depth will be taken up, to conserve maximum moisture. The seedling should have root shoot ratio as 1.25:1 for effective survival. The RFO(EGS) will be the planting expert for the difficult forest areas. This target oriented work of afforestation will make his performance more visible. The right choice of the species supported by a good sized seedling, with a well developed root system shall be the key to the solution. The species to be raised by the RFO in nursery, commensurating with the soil type, shall be in consultation with the DCF and the ACF concerned. The soil mapping as done at the time of preparation of treatment map, will help in selecting the right species to be raised in the nursery.

Choice of species: The choice of species will depend upon the type of soil, depth of soil, potential of rainfall etc. Important species like Acacia catechu, Dalbergia latifolia, Dalbergia sisoo, Anogeissus latifolia, Acacia arabica, Acacia nilotica, Bombax ceiba, Adina cordifolia, Syzygium cumini, Albizzia amara, Albizzia lebbek, Albizzia procera, Azardirachta indica and Terminalia species , Acacia leucophloea etc.are recommended for planting along with Tectona grandis. Species should be chosen depending upon the site / soil conditions of areas to be planted. It is clarified here that Tectona grandis Dalbergia sissoo, Adina cordifolia , Bombax ceiba and Terminalia species are light demanding species while Syzygium cumini is a shade tolerant species. The planting model should contain a mixture of light demander and shade tolerant species both . The list of such species is given in Appendix II.XII.3. The nursery techniques of most of the species mentioned aforesaid , have been developed earlier. Tall seedlings with good root growth and root shoot ratio of 1.25 : 1 , should be preferred for planting as these are strong enough to withstand adverse conditions in the field like excessive heat, damage by animals and low moisture availability in sub-soil. In selection of species , the local villages may also be consulted. Thus, their local demands will be considered , while selecting the species , so that they take keen interest in protection of these plantations. Some of the areas of this division such as Nandgaon, Yeola and Chandwad are highly prone to grazing. In such areas, the choice of species shall be made with a view to overcome this problem .The non palatable species shall be preferred.

Treatment for Area 'C': These are the areas having good natural pole crop or successful old plantations. These will be dealt as per the provisions of Working Plan for Old Plantation Working Circle. The unsuccessful plantations shall be reboised as per prevailing rules.

Treatment for Area 'D': This is a well stocked area having crop density more than 0.40.The area will be given treatment as given below.

(i) No plantation activity will be taken in this area .

(ii) All the high stumps with no shoots will be cut flush to ground and dressed with axe.

(iii) The multiple pole crop will be reduced to one. Only the most promising stem will be retained.

(iv) The climbers on trees will be removed except those having medicinal value. The dead, dying and diseased trees will marked for felling and removed. Only two such trees will be retained for the benefit of wild life.

(v) Undesirable under growth interfering with seedling regeneration will be removed.

The whole afforestation coupe will be strictly protected from forest fires .The fire tracing will be carried out in the required width. Villagers will be sensitized and involved to protect the area particularly in fire season. Every year in July , a fire assessment will be carried out , using satellite data , by carrying out digital image processing .This annual study will give an broad assessment of the area burnt till June . The coupe will remain closed for grazing for a period of five years. If any area of this coupe is allotted to village committee for JFM or FDA, the treatment to that area will be given as per the prescriptions of this working circle.

FODDER MANAGEMENT WORKIG CIRCLE: All the kuran areas of the division have been allotted to this working circle. The area allotted to this working circle is 5941.508 ha. which constitutes 4.78 percent of the total area. All these areas are devoid of any vegetation. The object of this working circle is to improve the quality and quantity of fodder in this area. This area has been divided into following 4 categories for the sake of treatment.

Area 'A'-Protection Areas: (i) Areas having slope more than 25^0
(ii) All the heavily eroded areas and rocky patches.

Area 'B'- Under Stocked Areas: It will include all the other areas of the blank areas and the areas not included in Categories A,C & D.

Area 'C' –Pole crop and old plantation areas: It will include all the areas having good crop of teak and other species suitable for retention as a future crop. It will also include the patches

of successful old plantation, but such areas should be more than 2 ha and will be dealt by the provision of Old Plantation Management (Overlapping) Working Circle.

Area 'D'- Well stocked Areas: Areas having more than 0.40 crown density will be included in this category.

The treatment to be given for various categories of areas will be as follows.

Treatment for area 'A' : The following treatment is prescribed.

(i) No felling of any tree or bush will be carried out in this area

(ii) Suitable soil and moisture conservation works such as nalla bunding, gully plugging, WATs etc. will be taken up in the area to arrest the flow of water and prevent soil erosion.

(iii) Sowing or slips of species Heteropogon, Dichanthium anulatum, Borthiochloa intermedia shall be sown/planted in 25 ha. of the annual coups area, where the soil is fragile. These species are the strong soil binders.

(iv) Seeds of local species will be dibbled and cutting of Vitex spp. along with Agave bulbils will be planted in the accessible area having good soil. Root suckers of important species as mentioned in the Chapter of Working Plan for Protection Working Circle should also be encouraged where possible.

Treatment for area 'B' : The development of grass land will be the main activity.

Development of Grass Land:- The existing grass land basically abundance in *Schima nervosum Cyperus rotundus, Eragrastisnstis tenella, Ischaemum rugorum,* but there is a need to introduce a good foliage grass for grazing and stall-feeding purposes. To start with, it is proposed to first introduce annuals like Dinanath (*Penninsetum pedicellatum*) by direct sowing and after it has established in a year or two, it will be followed by introduction of perennial like *Heteropogen contortus*, *Chrysopogon fulvus and Dichanthium annulatum*.

Dinanath (*Pennisestum pedicellatum*)- It is a good grass for raising in monsoon season i.e. for kharif season. The optimum temperature for growth is 30-35 celsius and ideal rainfall for its growth may be around 500 to 650 mm, but it can grow well and produce seeds even in lesser rainfall. It grows well on fertile loamy soils, but with green manure, it can be grown on sandy soils as well. Dinanath grass can tolerate both acidic and alkaline soils. A fast maturing grass, it has a good compatability with legume. Seeds are sown by simply broadcasting , or preferably dribling one cm below ground in a line and nearly 40-50 cm apart and it should be sown just before the onset of the monsoon, when one or two good showers have been received. Seed rate per hectare is 1-2 kg. It thrives well in area receiving annual rainfall from 500 to 1270 mm and grows on wide range of soil types and is considered to be a drought resistant. It may be mixed with *Cenchrus,*

Dichanthium, *Heteropogon*, *Schima*, *Chrysopogon* etc. In the first year, the grazing should be avoided ,however, it can be cut for stall feeding, 10 cm above ground, after four months of its sowing in exception case.

Treatment for area 'C':

1 No planting shall be done in these areas.

2. The congested pole crop of natural and plantation origin shall be marked for thinning as per the rules given in the chapter of 'Old Plantation Management (Overlapping) Working Circle'. Accordingly the number of poles per hectare will be reduced to create the healthy conditions for their growth.
3. All the dead and malformed poles shall be marked first for thinning.
4. Undesirable undergrowth which is interfering with the development of the seedling will be removed.
5. The multiple poles shall be reduced to one healthy pole per stool.
6. The poles of the coppice origin will be removed whereas the poles of seed origin will be retained. In case of choice within coppice crop, the side shoots will be preferred.
7. All the high stumps found in the area shall be cut a flushed to the ground with sharp axe to get vigorous coppice shoots.
8. Guinea grass, being a shade tolerant perennial grass will be sown/ planted in the area either through seeds or through slips in subsequent years.

Treatment for area 'D':

1. No planting will be done in this area.
2. All the climbers on the trees will be cut except those having medicinal properties.
3. All the dead and malformed trees will be marked for felling. Two dead trees per hectare will be retained for benefit of the wildlife.
4. All the multiple coppice stems will be marked to reduce their number to one per stool. The most promising stem will be retained.
5. The undesirable undergrowth preventing the development of the seedlings of desired species will be removed.

The coupe will be fire traced every year to protect it from fire. It will also be closed for grazing at least for five years. Village protection committees will be involved in fire tracing and its protection.

JFM micro plans: If any area of this working circle is included in the JFM or FDA micro plans, it will be treated as per the prescriptions of this working circle. Initially pockets

of perennial grasses will be developed in each type of the area. This pocket may vary in size (1000 sq m to 2000 sq m per 2-3 ha.) depending on resource availability. Such pockets will serve two purposes – First as source for planting material and secondly seed formation in such pockets will help in auto-seeding & spread of the grass in future.

MISCELLANEOUS WORKING CIRCLE: This working circle consists of the patches which are still forest areas but are being used for other purposes such as offices, nurseries, depots, residences etc. Some of these areas have been diverted under Forest Conservation Act 1980 for non-forest purposes. In many forest areas, the ownership of the land has been transferred to the private individuals by the revenue department but these are still forest lands as per the records of the forest department. These lands are mostly under cultivation. Their ownership titles need to be settled by the division.

WILDLIFE (OVERLAPPING) WORKING CIRCLE: This working circle covers the whole area of the division. In the area of this Working Circle, one Borghad conservation reserve has been declared by the government. The object of this working circle is to conserve and improve the habitat of the wildlife. The habitat improvement works such as deepening of water holes, constructions of new water holes and SMC works will be carried out. All the wetlands will be monitored and protected. The GIB and Rajapur - Mamdapur areas will be managed properly for rare and endangered wild life in this area. The grasslands will be managed properly for rare and endemic birds found in this area. The nesting and resting areas of Vultures will be given special care for its protection and management.

JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE: There are 464 villages in the jurisdiction of this division. The forest protection committees have been formed in 293 villages. Out of this, the works have been taken up in 75 villages under this scheme. Total 2931 hectares of plantations have been taken up under this programme in these villages. These committees have been evaluated under Sant Tukaram Vangram Yojna and some villages have been given the awards for distinguished work. The introduction of self help groups and monitoring of the committees have been prescribed in this working circle.

FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE: This is a working circle covering the entire area of the division. The object of this working circle is to protect the existing flora and fauna. The division is presently facing the problem of heavy illicit felling and encroachments in some ranges. In addition to this, there is frequent unauthorized grazing in the whole forest area. Incidences of forest fires are also seen particularly in

summer months. Therefore, there is need to strengthen the field staff in sensitive areas and upgrade their skills. The help of other departments should also be taken in tackling this difficult problem. The local people must be motivated to protect the wealth of their villages. The legal encroachments of the people as per the "Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006" should be regularized as early as possible .There after, a special scheme should be prepared to evict the illegal encroachments. The area will be divided into various categories for the sake of fire control and strict fire control measures will be taken. The sheep grazing has been banned completely in the division. The grazing of other animals will be regulated as per the orders of the government.

NTFP (OVERLAPPING) WORKING CIRCLE: This is an Overlapping Circle covering entire area of the Division. The objects of management will be

1. To identify and assess the NTFP resources in the division.
2. To promote their scientific harvesting.
3. To improve the quality and quantity of Non Timber Forest Produce.
4. To ensure their sustained yield in future.
5. To promote the density and abundance of medicinal plants through raising plantation in the forest area, which have found usage in ayurvedic and allopathic system of medicine.

To improve the socio - economic condition of the people and generate employment opportunities.

Promotion of Medicinal Plant in East Nashik Division: FRLHT has identified one MPCA in Saptashurungi area of East Nashik Division, Kalwan Range This shows the abundance of medicinal plant species in East Nashik Division. AYUSH Department of Government of India under Indian system of medicine is an determined organization to promote these medicinal plants and has come up with the various beneficiary schemes to promote them in forest area. There is a massive gap between the demand and needs and especially for the plant species, which are used in tonic formulation.

For meeting demand cultivated material is infinitely more appropriate for various uses. Systematic cultivation of medicinal plants is urgent needs to fulfill the demand of markets.

a. Good sustainable forestry practices which will include appropriate selection, identification, propagation methods, cultivation techniques, harvesting, stepwise quality control of raw material up to processing stage, post harvest treatment, storage and safety.
b. Development of protocols for producing planting materials with desirable agronomic and therapeutic chemical derivatives.
c. Genetic transformation techniques to be developed and standardized.
d. Organic farming of medicinal plants as per world demand of today.

The existing medicinal plant areas shall be preserved by identifying them at the time of coupe demarcation, and then left them undisturbed.

The biggest challenge facing the artificial propagation of many of the medicinal plants, especially related to herbs and shrubs is the lack of the availability of the viable seeds. FRLHT has published a book on tropical Indian medicinal plants, which provides a nursery technique for 81 forest species (found in Nashik Circle as per BSI). Moreover, TFRI, Jabalpur in its letter attached as Appendix-II-XV.14. has stated that the seedlings of 33 forest species are available in their nursery at a specified rate. In every Afforestation scheme to be implemented, under the Working Plan, shall contain at least 10% of the trees species with its known ayurvedic usage, as listed in Table 3 . In addition to that annually 50 hectare of plantation shall be taken on a suitable soil of medicinal plant species which are of herbaceous and shrub nature. These plantation will be raised by following usual plantation practice, by first raising its nursery and then transplanting them in forest along with earth ball/ in small polytubes. The species selected shall be from the endemic species of area listed in Table-2 and each species shall not exceed 5% of its total planting stock. A minimum of 25 such species shall be planted and nursed. Every year this diversity in raising nursery stock shall increase. All 14 herbs/shrubs species listed in Table-1 shall be raised. Similarly, species used in Allopathic System of medicine as given in Table-3 shall also be planted. The nursery technique of few of the species is annexed in Appendix – II-XV-15. East Nashik Forest Division shall create one central nursery for especially dedicated to medicinal plantation, since many of these species (especially shrub) can be raised through vegetative propagation, a rooted stock nursery of these species will be raised well in advance.

Harvesting of NTFPs should be done very carefully. The method of harvesting must be non-destructive and scientific. The leaves and bark of plants shall be taken in such a way that it does not cause any damage to them. The branches of Tendu and Apta trees shall not be broken for collection of their leaves. Seeds and fruits of the plant shall be harvested when they are fully mature.

It has been commonly seen that villagers do not maintain the standard of quality at the time of collection of NTFPs. The green leaves, bark and fruits collected get infected with fungus due to high level of moisture in them. Therefore, villagers shall be given training by Division

regarding drying of the collected products in shade so that their nutritive value remains intact and quality is not spoiled.

Marketing is the most important link in the trade of NTFPs. Usually it is seen that villagers collect the NTFPs, but it is sold to the local traders at a throw away prices. There is no organized market particularly in tribal areas. Most of the profit is taken by the intermediary traders only. Therefore, staff should facilitate that all the 33 monopoly products reserved for TDC must be sold to the corporation at the pre fixed rates. No trader shall purchase these products. JFM committees must be trained and encouraged to make the local people aware regarding marketing facilities available for them in tribal areas. In the non tribal areas also, forest department staff must help the villagers in getting remunerative prices for product. It will help in strengthening the economy of rural communities living around the forest and restoring their confidence in the department.

BAMBOO (OVERLAPPING) WORKING CIRCLE: There are two species of bamboo found in this tract. These are Dendrocalamus strictus (Manvel) and Bambusa arundinacea (Kashti). The condition of bamboo clumps is not very satisfactory. There are in hacked, malformed and congested condition. The gregarious flowering of Kashti bamboo took place in this area in year 2007-08. Consequently, most of bamboo clumps got dried. But it was not extracted timely except in Kalwan range, where dry bamboos were extracted from 65 hectares of forest area in compartment No. 299. This resulted in breaking and decaying of culms at its site. Good natural regeneration of Kashti bamboo has taken place at many places, but it is congested and has a switchy growth, requiring an immediate silvicultural intervention.The objects of management of bamboo in this area are as follows.

(i) To improve the condition of bamboo and secure better yield from it in future.

(ii) To encourage the natural regeneration and secure its establishment.

(iii) To meet the local demand of bamboo to the extent possible.

(iv) To improve the stocking of bamboo in the area where it existed in the past through artificial regeneration.

Working Plan in accordance to instructions of the State Level Committee recommendations of 26th November 2012 at Nagpur for East Nashik Forest Division

Chief Conservator of Forests,
(Working Plan) Nashik

Chief Conservator of Forests,
(Territorial) Nashik

Deputy Conservator of Forests
East Nashik

Collector, Nashik District
Nashik

Additional Chief Conservator of Forests,
(Working Plan West,) Pune

Additional Chief Conservator of Forests,
(Conservation) Maharashtra State
Nagpur

Additional Chief Conservator of Forests,
(Non-timber Forest Produce Monitoring & Evaluation)
Maharashtra State, Nagpur

Additional Chief Conservator of Forests
(Budget, Planning & Development)
Maharashtra State, Nagpur

Chief Conservator of Forests,
(Central) Regional Office,
Western Region Bhopal (M.P.)

Principal Chief Conservator of Forests,
(Policy & Technology) Maharashtra State,
Nagpur

Principal Chief Conservator of Forests
(Production & Management)
Maharashtra State, Nagpur

Principal Chief Conservator of Forests,
(Wild Life) Maharashtra State,
Nagpur

Principal Chief Conservator of Forests
(H.O.F.F.) Maharashtra State;
Nagpur