GOVERNMENT OF MAHARASHTRA

FOREST DEPARTMENT

WORKING PLAN

FOR

MALEGAON FOREST SUB-DIVISION

(MAHARASHTRA STATE)

VOLUME –I

FOR THE PERIOD

2015-16 TO 2024-25

BY

DR.V.CLEMENT BEN,IFS

CONSERVATOR OF FORESTS,

WORKING PLANS DIVISION,

N A S H I K

अपर प्रधान मुख्य वनसंरक्षक (कार्य आयोजना - पूर्व), नागपूर यांचे कार्यालय.

सि.पी.ॲन्ड बेरार शाळेजवळ, रविनगर, सिव्हिल लाईन्स, नागपूर
दूरध्वनी क्र. (०७१२) २५६५०५९ फॅक्स क्र. (०७१२) २५६५०५९

अत्यंत महत्वाचे/तातडीचे

कमांक कक्ष-१४/काआ/मालेगांव / ११६० /२०१५-१६
नागपूर-४४० ००१, दिनांक १८ /१२/१५

विषय :- मालेगांव उपवनविभागाचे डॉ. व्ही. क्लेमेंट बेन लिखीत कार्यआयोजना सन २०१५-१६ ते २०२४-२५ या कालावधीचा प्रारूप कार्यआयोजनेस मंजूरीबाबत

संदर्भ- अपर प्रधान मुख्य वनसंरक्षक (मध्य), पर्यावरण,वन एवं. जलवायु परिवर्तन मंत्रालय, भारत सरकार, नागपुर यांचे पत्र क्र १२-०३/२०००(For) दि. १४/१२/२०१५

उपरोक्त संदर्भिय पत्र क्र १ अन्वये केंद्र शासनाने डॉ. व्ही क्लेमेंट बेन लिखीत मालेगांव उपवनविभागाचे कार्यआयोजनेस सन २०१५-१६ ते २०२४-२५ पर्यत मंजुरी प्रदान केलेली आहे. सोबत संदर्भिय पत्राची छायांकित प्रत सहपत्रित करण्यात येत आहे.

संदर्भिय पत्रात नमुद केलेल्या अटीच्या अधिन राहुन दिलेल्या निर्देशाप्रमाणे आवश्यक ती कार्यवाही करावी व सदर कार्यआयोजनेस तातडीने अमलात आणावे.

तसेच केंद्र शासनाने मंजुरी प्रदान केलेल्या मालेगांव उपवनविभागाचे कार्यआयोजनेच्या खंड-१ व खंड-२ ची प्रत्येकी १ प्रत या कार्यालयाचे ग्रथांलयात ठेवण्याकरिता सादर करावी. तसेच कार्यआयोजना खंड-१ व खंड-२ ची एक प्रत इंदिरा गांधी वनअकादमी, देहरादून यांना ही पाठवावी व सदर कार्यआयोजनेचे Soft Copy सुध्दा या कार्यालयास सादर करावी.

सहपत्र- वरील प्रमाणे

RS. WP 23 DEC 2015

100 as desired

अपर प्रधान मुख्य वनसंरक्षक
(कार्य आयोजना-पुर्व) नागपूर.

प्रति,
वनसंरक्षक कार्यआयोजना विभाग नाशिक

प्रतिलीपी :- प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन) म. रा. नागपूर यांना माहितीस्तव सादर.

प्रतिलीपी- अपर प्रधान मुख्य वनसंरक्षक (कार्यआयोजना-पश्चिम) पूणे यांना सहपत्रासह माहिती व कार्यवाही करिता समादराने अग्रेषित

प्रतिलीपी :- मुख्य वनसंरक्षक, (प्रादेशिक) नाशिक यांना सहपत्रासह माहिती व आवश्यक कार्यवाहीस्तव अग्रेषित.

प्रतिलीपी :- उपविभागीय वनअधिकारी मालेगांव यांना सहपत्रासह माहिती व आवश्यक कार्यवाही करिता अग्रेषित

Conservator of Forests
Working Plan Nashik
Inward No. 3600
Date 25/12/2015

(कार्य आयोजना-पूर्व) नागपूर

1 5 DEC 2015

क्रमांक 2910

भारतसरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जल वायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE

Regional Office (WCZ)
Ground Floor, East Wing
New Secretariat Building
Civil Lines, Nagpur - 440001
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FILE NO. 12-3-2000 (FOR)/

Dated : /4/12/2015

To,

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

Sub: Working Plan – of Malegaon Forest Sub-Division written by Dr. V. Clement Ben IFS for the period of 2014-15 to 2023-24.

Ref: (1) P.C.C.F. (P&M), M.S. Nagpur Letter No. Desk-14/WP/Malegaon/1133 dated 20.12.2014.
(2) Govt. of Maharashtra Lr. No. FDM-2015/CR 201/F-2 dated 5/08/2015

Sir,

With reference to the above mentioned subject, approval of the Central Government is granted,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 2015-16 to 2024-25. Necessary corrections may be made in the final copy of the Plan.

2. The orders of Hon' ble Supreme Court in the matter of GodavarmanThirumulkpad 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 order to Hon' ble Supreme Court's Order dated 22.09.2000, the Government of Maharashtra shall ensure that regeneration of forests is commensurate with felling carried out under this working plan.

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 events 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 22.09.2000 , 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. Instruction/ directions of the Central Government that may be issued in future in this

regard shall be strictly complied with. Felling to be done by State Government only after seeking permission from Core Group constituted by the MoEF, New Delhi.

6. Period of last Working Plan was up to 2011-12. Present Working Plan is approved from 2015-16. Intervening period will be considered as per the prescription of last working plan and whatever work has been carried out may be got regularized /will be considered as part of last working plan, after taking approval of the competent authority, wherever needed.

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

8. Standard thinning and silvicultural operations under the strict supervision of Assistant Conservator of Forests and above will be allowed as per norms to improve the health of growing stock while executing the prescriptions of the Working Plan.

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 to time.

12. 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 Nagpur.

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

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

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

16. Removal of dead and diseased trees will be undertaken under the supervision of an officer not below the rank of Assistant Conservator of forests.

17. All kind of felling including that of dead 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 use for the assessment of growing stock. This report shall be prepared annually working circle wise and compartment wise by the territorial Sub- DFO and shall be submitted to the C.F, Working Plan for this purpose

within 02 months of the end of control year. Such removal shall be accounted for against the prescribed felling yield of the relevant year.

18. To ensure sustainable management of Non Timber Forest Produce (NTFP), scientific assessment of estimated quantity has to be done before their removal as per the prescription of Working Plan.

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

20. Execution of Working Plan shall be in conformity with the National Forest Policies.

21. A definite plan has to be made to remove encroachment and plant the vacated area by planting suitable local species as per Government of India and Hon'ble Supreme Court Orders/Guidelines in the matter.

22. Eco-tourism shall/ may 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-tourisms sites will be managed by the forest department as per the prescriptions of the working plan.

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

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

25. Exotic species should not be planted in Plan areas.

26. Proper mechanism has to be put in place to control illegal felling, grazing &fire. Proper fire plan shall be prepared and executed meticulously.

27. Only 50% of normal yield, if silviculturally available ,will be allowed for removal in case of teak, Dhawada , Bhirra, Chichawa, Salai, Mowari, Rohan, Shiwan, Shisham, Surya, Kasai, Mokra, Palas, Dhaman, Bhilwara, etc. In case of haldu, Ain, Bija, Tiwas, Kalam, lendia, Garadi, Khair it will be 33% if silviculturally available.

28. A chapter will be added on activities of Forest Development Corporation as required under chapter IV of Working Plan Code, 2004.

29. Efforts should be made to undertake artificial regeneration of local species in such a way that it both serve the purpose of biodiversity conservation of meeting the demand of fuel wood, fodder and the timber.

30. Babul Ban, if any, will not be expanded at the cost of local species.

31. Lac cultivation, if any, will be practiced as per the provisions of Forest (Conservation) Act, 1980.

32. Documents and appendices mandated in National Working Plan Code will incorporated in the working plan.

33. Attempts shall be made to grow trees outside forest areas to meet the local demand of small timber, fuel wood & fodder.

34. All the left over mandated chapters, appendices and maps will be added in Working Plan.

35. Proper mechanism is to be place in an adequate manner that such case NTFPs are collected in sustainable manner.

36. Socio-economic survey is to be conducted within first year of implementation of plan and the same be appended with the Working Plan.

37. Grassland will not be expanded at the expense of natural tree cover.

38. While managing forests provisions of the Biodiversity Act, 2002 shall be fully complied.

39. Cutback operation shall be undertaken as per standard norms.

40. Prescriptions on Wildlife Management should be vetted by the CWLW and a certificate of the same be attached to the plan at the time of final printing.

41. No regularization of existing encroachment should be done without following due procedure. And an appendix may be added giving details of the encroachment of the forest area in the division.

42. Grazing to be properly regulated and grazing fee should be levied.

43. All the Unclassed Forest, Acquired CA areas and Acquired Private Forests should be notified as RF/PF in time-bound manner and be carried out at the earliest.

44. 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. Relevant modification in the working plan are required to be carried out so as to keep it is 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 from time to time.

45. Malegaon Sub Division was carved of the erstwhile East Nashik, Forest Division as per Government GR No. VIP-20071-Pr4a.Kra.263/F-2, Mumbai dated 3/12/2008 encompassing an area of 81607.413 ha. Hence a separate Working Plan for Malegaon Sub Division has been prepared. This fact has to be reflected in the summary of the prescription and Chapter-I's Area Statement in detail.

Yours faithfully,

(Ashok Biswal)
Conservator of Forests(Central)

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SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED

PART – II

FOREWORD

The Working plan for Malegaon Sub Division by Dr. V. Clement Ben replaces the previous Working Plan for East Nashik Forest Division by Shri. B.P. Singh.

The Malegaon Sub Division was carved out of the erstwhile East Nashik Forest Division as per Government G.R. No. VIP-2007/ pra.kara.263 / F-2 Mumbai dated 03.12.2008 encompassing an area of 81607.413 Ha. Hence a separate Working plan for Malegaon Sub Division has been prepared.

In this plan more emphasis has been given on forest protection by involving the local people in both afforestation as well as protection of natural crop by prescribing appropriate silvicultural operations and improvement in grass quality. Besides, due importance to non-timber forest produce has also been given.

Dr. V. Clement Ben and his team have done commendable work in completing and they deserve a higher degree of appreciation for presenting this working plan for the Malegaon Sub Division.

(Dr.Vilas Bardekar ifs)
Additional Principal Chief
Conservator of Forests
Working Plans (West), Pune

ACKNOWLEDGEMENT

At this juncture, I am extremely grateful to the Revenue and Forest Department, Government of Maharashtra for the confidence bestowed in me and entrusting to author the Malegaon Working Plan. This piece of work was the creation of a team and not anyone in individual capacity. The undersigned feels deeply honoured in expressing my sincere thanks to peers viz. Shri. Shailendra Bahadur IFS, Principal Chief Conservator of Forests (Production and Management) M.S Nagpur and Dr Vilas Bardekar IFS, Additional Principal Chief Conservator of Forests (Working Plan-West) Pune for providing the resources at the right time and valuable insights leading to the successful completion of the working Plan. I am also thankful for the guidance and suggestions provided by Shri. G. Sai Prakash IFS, Chief Conservator of Forests and Shri. Arvind S.Patil IFS, Chief Conservator of Forests (Territorial) Nashik.

I am indebted to Dr Devendranath, IFS, Late Shri. H.N. Patil IFS, and Shri. C.M.Khade IFS, former C.C.F. Working Plan Nashik, Working Plan, Nashik for planning and the preparation of Working Plan of Malegaon Sub Division.

The undersigned acknowledge and appreciates the hard work and labour put in by Shri.T.Y.Nikam, Assistant Conservator of Forests (Retired), Working Plan, Nashik Shri.R.S.Jain, R.F.O., S.O.F.R. unit, Nashik, Shri. S.V.Kumbhakarna, RFO (Working Plan) and Shri D.U.Sonawane, Sub Divisional Forest Officer, S.O.F.R. Nashik and his team. I also appreciate the hard work and labour put in by Shri.V.B.Ghatge, R.F.O., Shri. S.A. Khan, R.F.O., Shri. S.D. Vispute, Ranger Surveyor, Shri.M.Y.Charoskar, Ranger Surveyor, Shri.V.P.Gaikwad, Ranger Surveyor, Shri.S.R.Patil, Surveyor, Shri.D.R. Gavit, Surveyor, Shri.V.D. Gujar, Surveyor, Smt.S.R.Deshpande, Steno, Smt.V.R. Ahire, F.G., Smt. V.S.Pote, F.G, Shri.V.G. Tatpurkar, F.G., Shri Jayant Rajendra Kadam, and other staff member of this office in preparing this plan.

Last but not the least I place a deep sense of gratitude to my family and friends who have been a constant source of inspiration during the preparation of this work.

(Dr.V. Clement Ben, IFS)
Conservator of ForestS,
Working Plan Nashik

INTRODUCTION

Throughout the ages, man has been forced, often as the result of his own activities, to live in lands where fresh water supplies are deficient, highly variable and of inferior quality. Historically, people in these regions have to accept the consequences of mismanaging their natural resources. Only when water resources failed, or were made useless by salinisation or massive siltation or when floods or wars swept away everything, were their activities abandoned. However scientific management plan has time and again proved that the natural forests can be protected and even the most devastated and marginal lands can be made productive again.

This Working Plan deals with the Reserved and the Protected forest areas under the control of Malegaon Sub Division. The Preparation of this plan was started during the tenure of Dr. Devendranath IFS, former Chief Conservator of Forests, Working Plan Nashik. The Preliminary Working Plan report of East Nashik Forest Division was prepared by Shri. A. S. Patil, Deputy Conservator of Forests, 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 IFS, Deputy Conservator of forests, 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 Dr.Devendranath IFS, former

Conservator of forest, Working Plan, Nashik. He had written most of the chapters of DWPR 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 Malegaon Sub Division which comprises of three ranges was started in the year 2011. Dr.Devendranath joined Working Plan, Nashik as Chief Conservator of Forest on October 25.10.2011 and he has given final shape to the chapters of Volume I of Draft Working Plan and Appendices of Volume II . After his transfer Late Shri.H.N.Patil IFS, took charge as Chief Conservator of Forest Working Plan Nashik and started the work of scrutinizing of the records from the Malegaon sub-division office. The undersigned took charge of Conservator of forest Working Plan Nashik on 01/11/2013. Having had several rounds of discussion with Shri Shailendra Bahudar, IFS, Additional Principal Chief Conservator of Forests, (Working Plan-West), Pune regarding various prescriptions proposed by Dr.Devendranath, Ex-CCF,WP, Nashik and started modifying and making changes in the prescriptions wherever necessary, gave final shape to DWPR of Malegaon Sub Division.

This draft-working plan deals with **81607.413** ha of forest area of Malegaon Sub Division for which 11 Working Circles have been proposed and appropriate prescriptions have been given in details.

Besides six main working circles viz. Protection Working Circle, Improvement Working Circle, Afforestation Working Circle, Fodder Management Working Circle, Old Plantation 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 **81607.413** ha. of forest areas. The forest areas in the ranges of Satana and Taharabad have found suitable for plantation and tending operations of coppice

growth of teak, so that in future the Sub 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 good teak plantation. The site quality corresponds to All India site quality IV except in the areas of Satana and Taharabad. In the past, efforts were made by the Forest Department to take up plantation programme in these areas but plantations got failed in a big way because of severe biotic pressure. However , suitable areas in Satana and Taharabad ranges can be taken up for the teak plantation and coppice growth of teak. These forests are having the potential to rejeuvenate if these prescriptions are implemented scrupulously. Further, all important suggestions given by the State Level Committee meeting have been incorporated in the draft Working Plan.

Date: June 2014
Place: Nashik

(Dr. V.Clement Ben IFS)
Conservator of Forests
Working Plan,
Nashik.

SUMMARY OF PRESCRIPTIONS

SECTION 1: INTRODUCTION

Malegaon Sub Division was carved of the erstwhile East Nashik. Forest Division as per Government G.R. No. VIP 2007-Pr4a Kra 263/F-2 Mumbai dated 3/12/2008 encompassing an area of 81607.413 ha. Hence a separate Working Plan for Malegaon Sub Division has been prepared.

The Malegaon sub division comprises of three ranges which are Malegaon, Satana & Taharabad. Most of the area of this sub division lies in Western Ghats. The total forest area of the sub division is 81607.413 ha, out of which Reserve Forest is 81349.171 ha, and Protected Forest is 258.242 ha. The net area with sub-division for management purpose is 81607.413 ha. The forest of this sub division belongs to southern tropical dry deciduous and thorn forest categories.

SECTION 2: PAST SYSTEM OF MANAGEMENT

The first working plan for Above Ghats 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. Sometimes 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 . Therefore, the sequence prescribed in the plan was also not followed.

The first consolidated working plan, covering the entire area of 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

This is the first Working Plan of Malegaon sub division.

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 Sub-division has been divided into following working circles.

Sr. No	Working Circle	Area allotted (ha.)	Percentage of area allotted
1	Protection W. C.	14537.843	17.81%
2	Improvement W. C.	4953.908	6.07%
3	Afforestation W. C.	46670.335	57.19%
4	Fodder Management W. C.	3287.826	4.03%
5	Old Plantation (0.L) W C	2240.266	2.75%
6	Miscellaneous W. C.	9917.235	12.15%
7	Wildlife (Over lapping) W.C.	81607.413	100%
8	Joint Forest Management(Overlapping W. C).	81607.413	100%
9	Forest Protection (Over Lapping) W. C.	81607.413	100%
10	NTFP(Over lapping) W.C.	81607.413	100%
11	Bamboo (Overlapping) W.C.	1228.876	1.5%

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 14537.843 hectares which constitutes 17.81% of the total forest area of the sub division. No harvesting of any type including the dead 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 will be under taken at appropriate places to prevent soil erosion. Seed-dibbling 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 . 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 34.774 trees per hectare in this working circle. The total area allotted to this working circle is 4953.908 ha which constitutes 6.07% 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

10 years. To meet the objectives of this working circle, the area will be divided into 4 categories.

A. 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).

B. 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:

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 overlapping working circle. No operation will be carried out under this working circle. The location of this plantation has been shown on maps provided with this Working Plan.

D. 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.

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 will be taken up. It will help in the establishment of the young regeneration and also 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, . 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': . 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.

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.

As these are the under stocked areas, the plantation activity will be taken up in blank patches. 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.

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 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' :

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

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 46670.335 ha. which makes it 57.19% percent of the total area. The object of this working circle is to increase the vegetative 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, gabion 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 No.II.IV-2**. 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 Malegaon sub division and they will be assigned the difficult plantable areas to afforest, like the hill slopes, plateaus . The annual target shall be fixed for them by the SDFO Malegaon sub 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* . 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 computable species for different type of soils is given in the **Appendix II.IV-4**. 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 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 Sub D.F.O. 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 . 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* .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 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 sub division such as Malegaon, is 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 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:

METHODS OF TREATEMENT :

II-5 .5.1 Grasses are annual crop and therefore, all the grasslands will have to be attended every year . Methods of treatment will be as follows

a) Treatment map will be prepared every year in advance for fencing, Improvement and S.M.C. (Soil & Moisture conservation) works.

b) The grasslands will be properly protected from animal grazing by making repair in the existing fencing either by TCM/barbed wire and digging TCM where old fencing does not exist. Inner boundary of TCM shall be planted with *Agave* spps. to make it more effective for protection.

c) Works will be carried out by ranges. Total compartments of the grasslands in the range will be grouped into 9 without dividing the compartment. If the number of compartments in a range is less than 9, one compartment will be treated every year till the last compartment. Sequence of working is given in Appendix II.V.1.

d) 5 % area of the annual groups of compartments will be treated intensively which will include soil working, removal of entire bush growth and unpalatable grasses by uprooting them before onset of flowering, seed sowing of good variety of grasses, carrying out weeding and also making use of organic fertilizers to promote the growth of the favoured grasses. For sake of giving such treatment the area will be divided into three classes and different modes of operations will be carried out in them as follows:

1. **Sloppy Area** – In sloppy area having 5-10^0 slope, C.C.T. equivalent to the extent of area to be treated will be undertaken and seed sowing of good variety of grasses on mound of dug-up soil will be done. Mound may be made flat for seed sowing of grasses.

2. **Flat Area –**In flat area having less than 5^0 slope where there is no chance of soil erosion due to ploughing, the extent of area to be treated will be ploughed. It is not desirable to have the area treated only in one patch,

however, a number of patches will be selected and its selection should be done in such a way that seed dispersal from there could cover the maximum area of the grasslands.

3. **Undulating Area**- If the area having lesser degree of ridges and valleys and are undulating, there is chance of soil erosion to take place due to ploughing, in such situation grass beds on flat area, at the rate of 100 grass bed per hectare is to be taken and all other operations as mentioned above will be carried out in such beds.

e) Native grass species may be taken as the better quality grasses for the purpose of seed sowing in area to be treated.

f) Three, two and one weeding in the 1st year, 2nd year and third year respectively will be taken up to remove unpalatable grasses and bushy growth from area treated either by taking grass beds or making CCT or ploughing and where seed of good grasses have been sown. In case of making use of fertilizer as a general policy only organic fertilizer shall be used and it shall be applied only after conducting analysis of the soil.

g) To minimize the percentage of unpalatable grasses in rest of the grasslands, the local people should be encouraged to cut and carry unpalatable grasses when they are tender and palatable. However, the palatable grasses should be cut and carried only after their seed dispersal is over.

h) Soil and Moisture Conservation works like gully plugging and nalla bunding will be taken wherever required. For this purpose also the compartment or group of compartments as mentioned above will be taken and entire compartment/compartments will be treated. Sequence of working is given in Appendix II.V.1

i) Chinkara is found in Malegaon Range. As Chinkara is a browser and therefore, bushes liked by it shall be protected and promoted through possible methods in particular and in general.

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 and guidelines of the working plan and shall be in accordance with various orders of the Hon'ble Supreme Court.

II-5 .5.2 - Grazing will be strictly prohibited in these grasslands. Grass will be disposed of exclusively on cut and carry basis. Existing tree growth will not be removed but tended properly.

II-5 .5.3-To allow fodder grasses to seed and multiply properly, cutting shall not be allowed during monsoon months (July to October).

II-5 .5.4- The grasslands shall be fire protected (Class I Fire Protection) every year before the commencement of fire season.

II-5 .5.5- Grasslands will be disposed of through the concerned Gram Panchayat on priority basis. Only if the Gram Panchayats are not willing to purchase, they will be disposed of by public auction. By doing so the local people will co-operate in protecting these grasslands. Otherwise local people will view these grasslands as not belonging to them causing disinterest in them for protection from grazing and fire. However, during natural calamity, if grass is needed, grasslands may be reserved to any extent.

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 financial outlay. 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.

OLD PLANTATIONS MANAGEMENT (OVERLAPPING) WORKING CIRCLE:

This is an overlapping working circle. The object of this working circle is to manage the old plantations by cleaning and using various tending operations. The old successful teak plantations will be cleaned and thinned as per the yield table. In the successful glyricidia plantations, suitable openings will be created to introduce the other local species.

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 . 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 Sub-division. 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 grasslands will be managed properly for rare and endemic birds found in this area..

JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE: There are 189 villages in the jurisdiction of this sub division. The forest protection committees have been formed in 156 villages. Total 1352.05 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 sub-division. The object of this working circle is to protect the existing flora and fauna. The sub-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 sub 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 Malegaon Sub Division:. AYUSH Department of Government of India under Indian system of medicine is an determined organization to promote 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 Forest Circle as per BSI). Moreover, TFRI, Jabalpur in its letter attached as **Appendix-II-IV.3.** 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 ha. 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.IV.3.** Malegaon Sub 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 through J.F.M Committees 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.

. JFM committees must be trained and encouraged to make the local people aware regarding marketing facilities.

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. These are in hacked, malformed and congested condition. Good natural regeneration of Kashti bamboo has taken place at many places, but it is congested and has a twisty 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.

ABBREVIATIONS USED IN THE PLAN

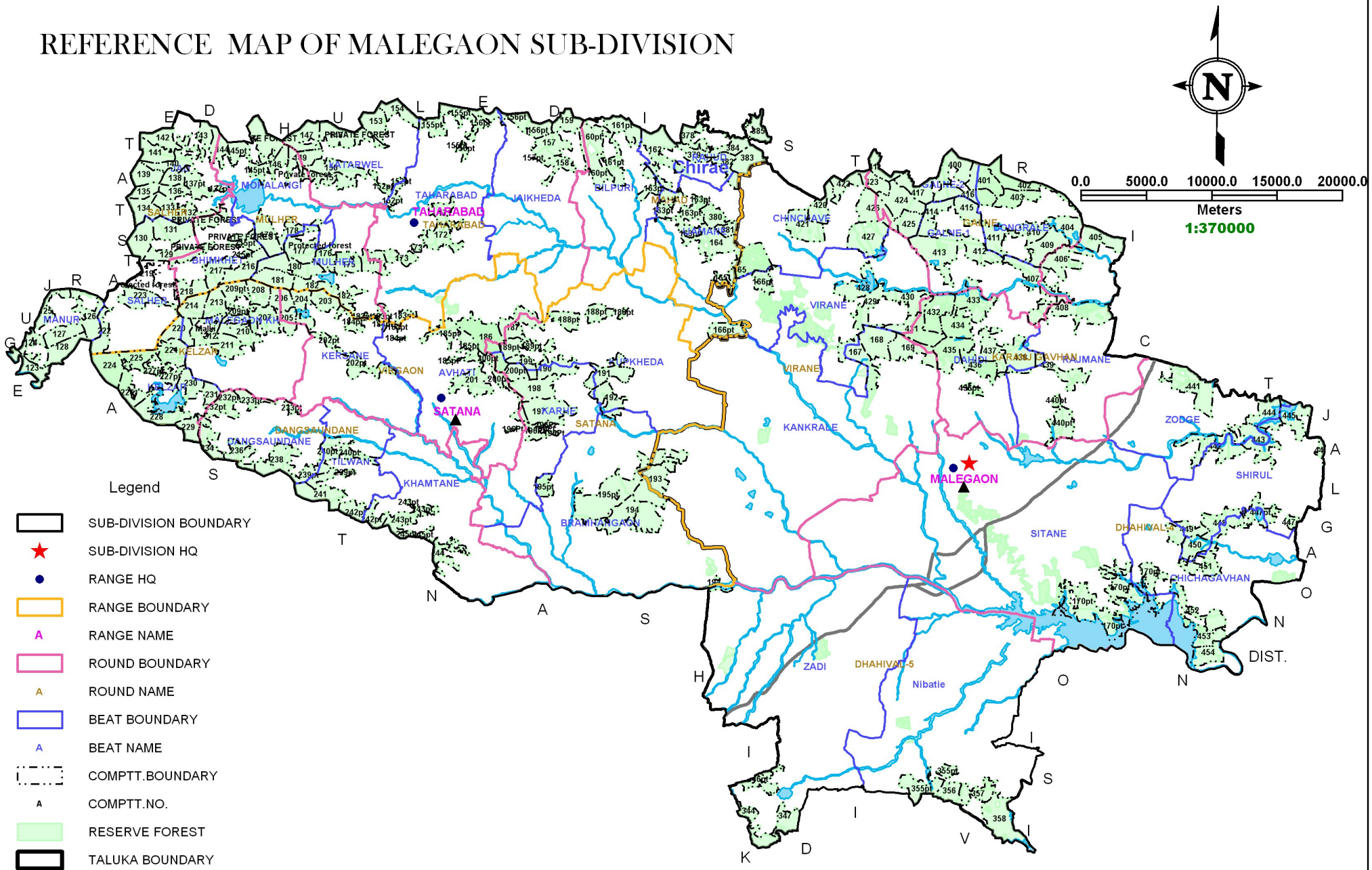
Sr.No.	Abbreviation	Details
1.	a.m.s.l.	Above mean sea level
2.	A.W.C.	Afforestation Working Circle
3.	b.h.	breast height
4.	BNHS	Bombay Natural History Society
5.	B.O.W.C.	Bamboo Overlapping Working Circle
6.	B.P.I.A.A.	Bombay Personal Inams Abolition Act
7.	BSI	Botanical Survey of India
8.	C.B.O	Cut Back Operation
9.	C.C.F.	Chief Conservator of Forests
10.	C.F.	Conservator of Forests
11.	Cft.	Cubic feet
12.	cm.	Centimeter
13.	cm^3	cubic centimeter
14.	comptt.	compartment
15.	d.b.h.o.b.	diameter at breast height over bark.
16.	d.b.h.u.b.	diameter at breast height under bark.
17.	D.W.P.R	Draft Working Plan Report
18.	Dn.	Division
19.	Enc.	Encroachment
20.	FCA	Forest Conservation Act
21.	F.D.A	Forest Development Agency
22.	F.D.C.M.Ltd.	Forest Development Corporation of Maharashtra Limited
23.	F.M.W.C.	Fodder Management Working Circle
24.	FRA	Forest Right Act
25.	FRI	Forest research Institute
26.	FRLHT	Foundation For Revitalization of local health Traditions
27.	F.Y.O.	First Year Operation
28.	g.b.h.	Girth at breast height
29.	ha/Ha.	hectare
30.	IFA	Indian Forest Act
31.	I.W.C.	Improvement Working Circle

32.	IVth Y.O.	Fourth Year Operations
33.	JFM	Joint Forest Management
34.	Kg	Kilogram
35.	Km	kilometer
36.	L.P.G.	Liquid Petroleum Gas
37.	M3 / m3	Cubic -meter
38.	M.A.I	Mean Annual Increment
39.	MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
40.	mm.	Millimeter
41.	M.S.	Maharashtra State
42.	Mt.	meter
43.	N.T.F.P.	Non-Timber Forest Produce
44.	No.	Number
45.	O.P.M.W.C.	Old Plantation Management Working Circle
46.	P.F	Protected Forested
47.	P.P.O.	Pre Planting Operations
48.	P.W.C.	Protection Working Circle
49.	P.W.P.R.	Preliminary Working Plan Report
50.	P.Y.O.	Preparatory Year Operations
51.	R.F.	Reserved Forest
52.	R.F.O.	Range Forest Officer
53.	S. M. C. Works.	Soil and Moisture Conservation Works
54.	S.D.F.O.	Sub Divisional Forest Officer
55.	S.O.F.R	Survey of Forest Resources
56.	Spps	Species
57.	Sq. Km.	Square Kilometer
58.	Sq.mt.	Square meter
59.	S.Y.O.	Second Year Operations
60.	T.C.M	Trench Cum Mound
61.	T.Y.O.	Third Year Operations
62.	TRD	Transferred to Revenue Department
63.	U.F.	Unclassed Forest
64.	Vth Y.O.	Fifth Year Operations
65.	W.P.	Working Plan

66.	W.C.	Working Circle
67.	W.S.	Working Series

INDEX OF TABLES

REFERENCE MAP OF MALEGAON SUB-DIVISION



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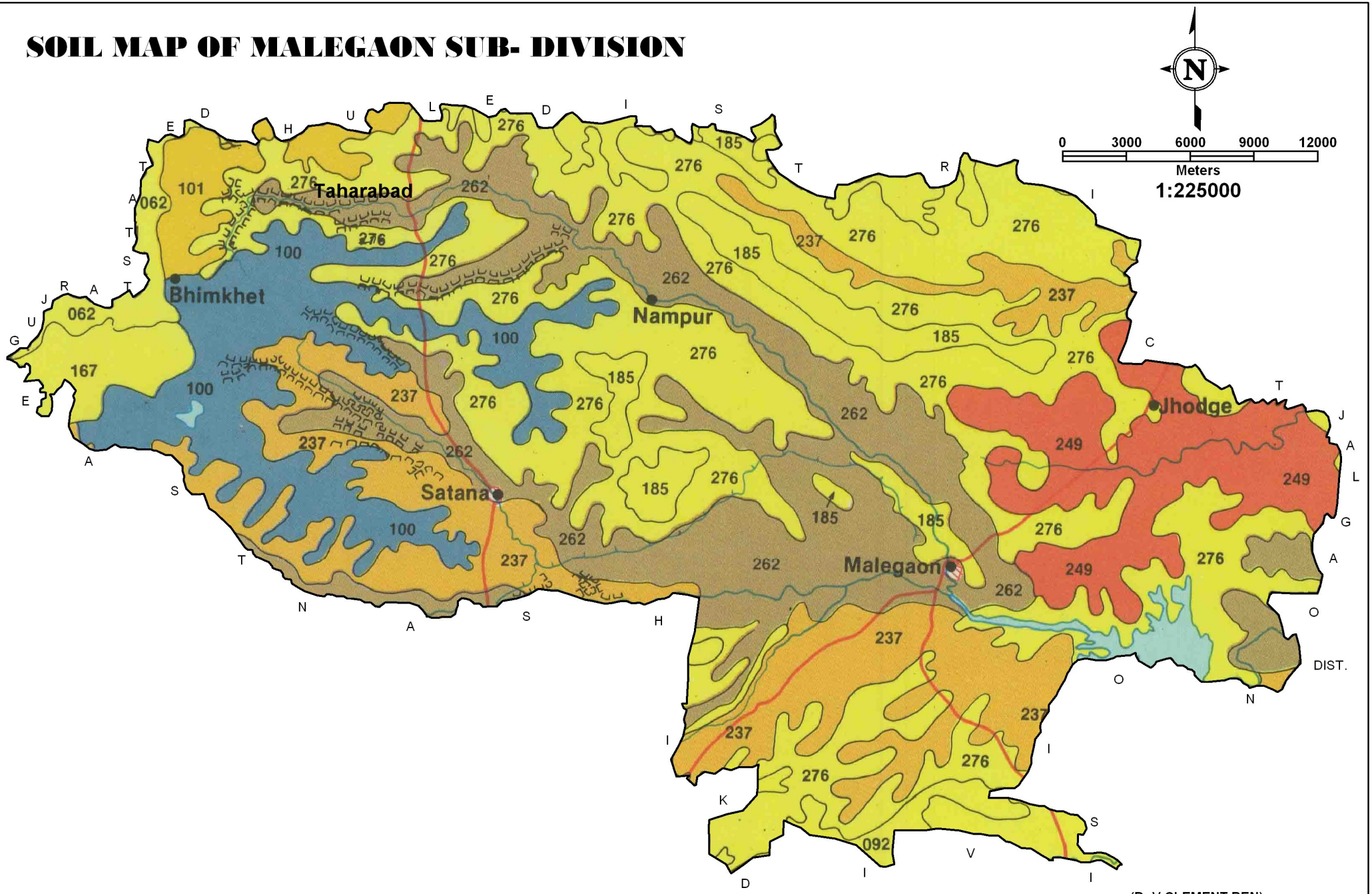
PREPARED BY SANDEEP PATIL SURVEYOUR W.P.NASHIK

SOIL MAP OF MALEGAON SUB- DIVISION



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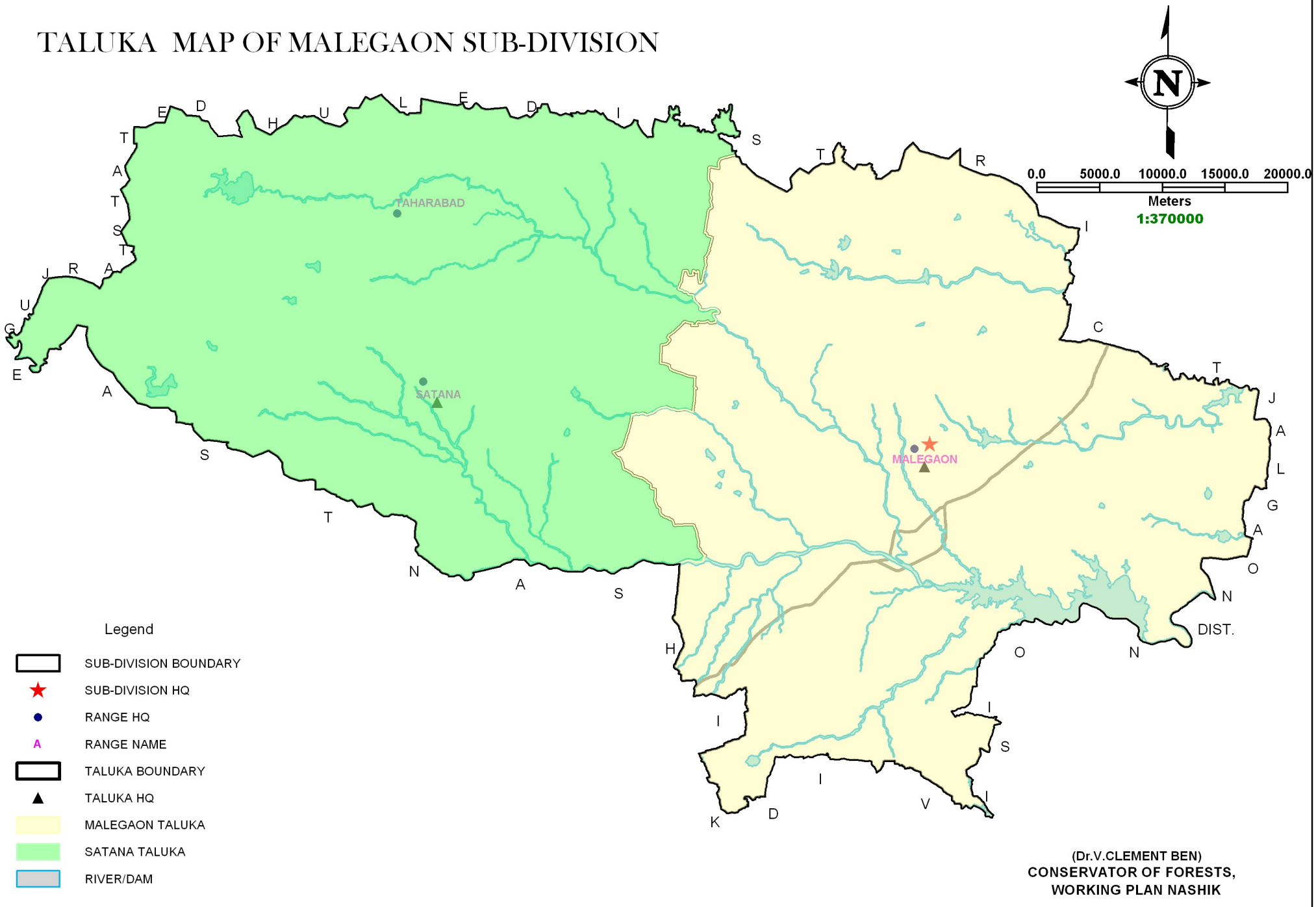
TALUKA MAP OF MALEGAON SUB-DIVISION



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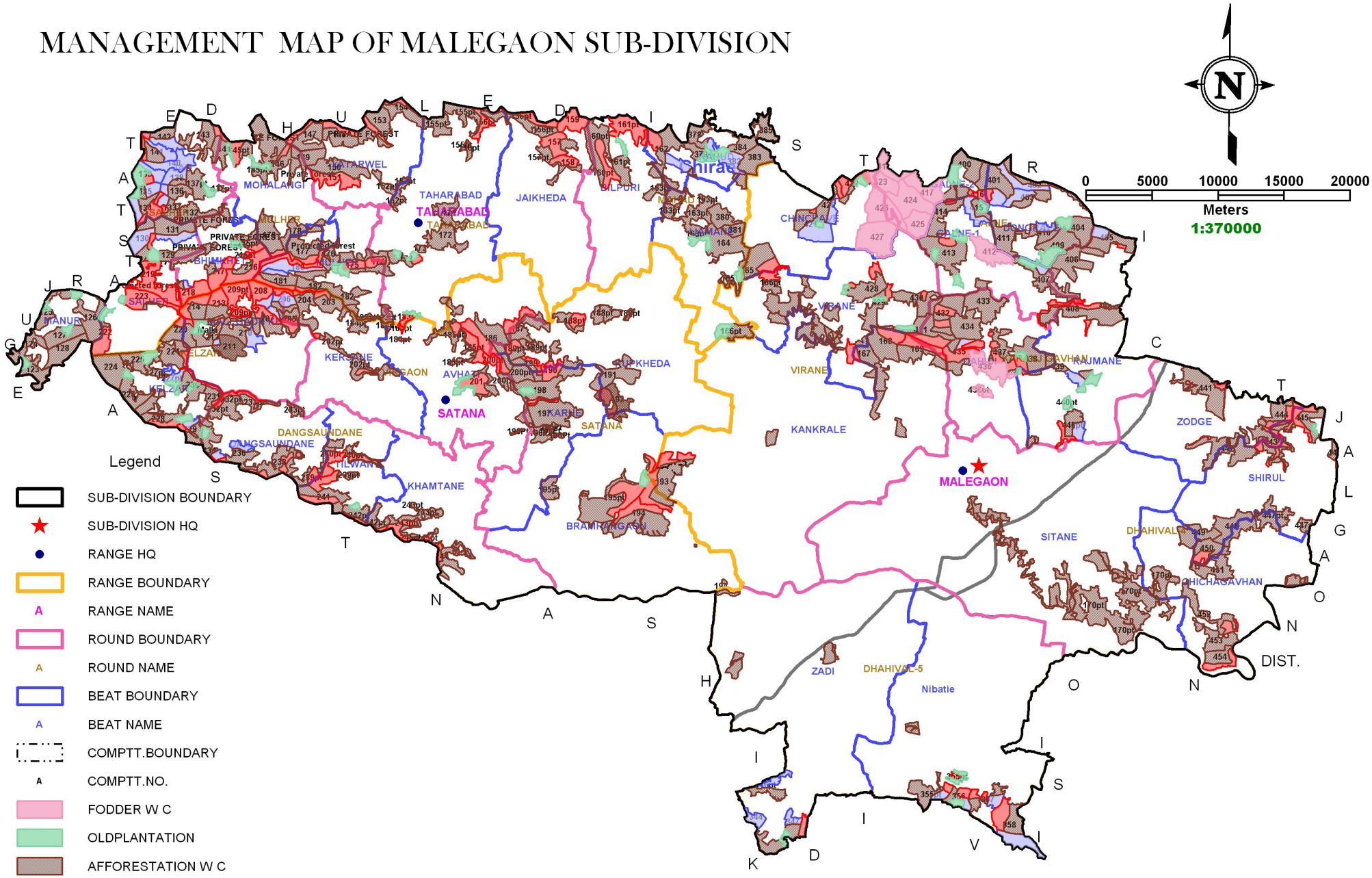
MANAGEMENT MAP OF MALEGAON SUB-DIVISION



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PART – I

SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED

CHAPTER – I

THE TRACT DEALT WITH

SECTION 1: NAME AND SITUATION

I.I.1.1 Malegaon Sub Division was carved of the erstwhile East Nashik. Forest Division as per Government G.R. No. VIP 2007-Pr4a Kra 263/F-2 Mumbai dated 3/12/2008 encompassing an area of 81607.413 ha. Hence a separate Working Plan for Malegaon Sub Division has been prepared.

This Working Plan covers the forest area of Malegaon Sub Division. The total forest area of Malegaon Sub Division as per Form No. 1 is 81607.413 ha. This area is distributed in Malegaon and Satana talukas of Nashik district. It lies between latitudes 20^0 51' & 20^0 38', 20^0 23' & 20^0 39' North and Longitudes 73^0 58' & 74^0 48', 74^0 40' & 73^0 52' East of geographical co-ordinates. The boundaries of the tract dealt with are given below.

North	:	West Dhule Division
East	:	Jalgaon Division
West	:	Gujarat State & East Nashik Forest Division
South	:	East Nashik Forest Division

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

SECTION 2: CONFIGURATION OF THE GROUNDS

I.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 Ghats and running in eastern direction. The elevation of these hills is higher

towards west as compared to east. The important hill range running through sub division is Mangi-Tungi with an altitude of 1331 mt. East to this hill is Selbari pass and further East are the Hindalbari Pass & Thorny Forest Near the eastern extremity of this hill range is the Galna Forest at 710mt.

SECTION 3: GEOLOGY, ROCKS AND SOIL

I.I.3.1 ROCKS: 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.I.3.2 SOILS : As regards the soil, the valleys are filled with disintegrated basalt of various shades from grey to black, washed down by rain. It is of argillaceous nature. This soil is not favorable 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.

SECTION 4 : CLIMATE AND RAINFALL

I.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.I.4.2 TEMPERATURE: The temperature of the region varies between 5.3^0 C to 42.40^0 C. May is the hottest month during which the day temperature reaches up to 42.40^0 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 mean minimum, mean maximum and mean average temperature in degree centigrade recorded in the region is given in **Appendix I.I.1**

I.I.4.3 RAINFALL : Most of the annual rainfall is received from south-west monsoon during the months from June to September. During November & December, some rainfall in the form of thunder showers also occurs. The average annual rainfall is 140.04 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 statement showing number of rainy days ,monthly rainfall in mm, average number of rainy days and average monthly rainfall as recorded at various stations is given in **Appendix I.I.2** .

SECTION 5 : WATER SUPPLY

I.I.5.1 The Malegaon Sub Division is drained by two main rivers - the Girna and the Mosam and their tributaries. The Girna river rises just south of Chirai village in Surgana tahsil at about 8 km, South-West of Hatgad in Sahyadris and flows nearly East along a wide and low bed. Several dams have been constructed across the main stream which irrigate large area of agricultural land. After passing through Satana, and Malegaon talukas it changes its course and flows North-East direction as it reaches near the Jalgaon frontier. The Girna in its upper course receives several rivers (tributaries), which are as follows:

TAMBDI : Arises in the Sahyadri from North of Hatgad and joins the Girna river at Chankapur.

PUNAND : Rises in the West of the Salher range and is having fairly long southerly winding course and finally joins the Girna river at Bej.

ARAM : Rises just South of Salher Fort and after a short southerly course flows Eastwards and joins the Girna river 5 Km. below Thengoda. The Hatni is the tributaries of the Aram and joins just above Satana from the northern side. The Kaner and the Sukia are the tributaries of the Hatni. The water supply is abundant.

MOSAM : This is the northern most main tributary of the Girna river whose origin is in Sahyadris at a place South of Hanuman Hill. River runs eastwards past Mulher Taharabad, and Jaykheda and joins the Girna river at about 3 km. below Malegaon.

SUKHI : This is the tributary arising in the hills of zadi Erandgaon and flowing from south to towards the north east of Malegaon Sub Division and it joins Girna near Gilane.

I.I.5.3 In addition to these rivers, there are several wells and tanks which supply water for irrigation and drinking .The list of important wells with depth (m)of water level from ground level and depth (m)of water in wells is given in **Appendix I.I.3**

SECTION 6 : DISTRIBUTION OF AREA

I.I.6.1 The total forest area of the Malegaon Sub Division as per Form No. 1 is 81607.413 Ha. Out of this, 81349.171 Ha. is reserved forest, 258.242 Ha. is protected forest. The net forest area with Malegaon Sub Division is 81607.413Ha.

1. Areas of reserved forests by toposheets, village maps and ranges is given in **Appendix I.I.4.**
2. **Forest areas by Ranges, Rounds and Beats is** given in **Appendix I.I.5.**

Table No. -1

Statement Showing Forest Area of Malegaon Sub Division

Range	**Reserved Forest (Ha.)**				**Total R.F. (Ha.)**	**Protected forest. (Ha.)**	**Total forest area (Ha.)**
	In charge of Forest Dept.	In charge of Rev. Dept.	Private Forest (Acquired)	Pasture Forest.			
Malegaon	30807.472	370.426	0.000	2612.676	33790.574	24.050	33814.624
Tarharabad	25085.954	13.152	1147.055	58.872	26305.033	234.192	26539.225
Satana	21019.412	0.000	0.000	234.152	21253.564	0.000	21253.564
Grand Total	**76912.838**	**383.578**	**1147.055**	**2905.700**	**81349.171**	**258.242**	**81607.413**

SECTION 7 : STATE OF BOUNDRY

I.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 the places, boundary pillars are in good condition. However, large scale encroachments are leading to destruction of boundary pillars at certain places. The Sub division had taken up the work of erecting the cement concrete pillars in the year 2002-03, now it is mostly done through cairns.

Table No. – 2

Statement showing the detail of the length covered with cement concrete pillars

Sr.No.	Year	No. of Pillars Erected	Length Covered(Km)
1	2003-04	56	1.75
2	2004-05	0	0
3	2005-06	0	0
4	2006-07	0	0
5	2007-08	0	0
6	2008-09	0	0
7	2009-10	0	0
8	2010-11	0	0
9	2011-12	50	9
Total		106	10.75

SECTION 8 : LEGAL POSITION

I.I.8.1 The Above Ghat Forests were declared as Reserved Forest between 1883 to 1928 by several notifications. The list of notifications under which the forests have been declared as reserved forests. is given in the **Appendix I.I.7.** 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.

1.The list of notifications under which the forests have been declared as protected forests is given in the **Appendix I.I.8.**

2.Details of compartment wise areas diverted for different activities is given in the **Appendix I.I.6**

3. The list of government notification under which areas were disforested U/S 27 of I.F.A. from 1947 to 1970 is given in the **Appendix I.I.9.**

SECTION 9 : GENERAL PRIVILEGES

I.I.9.1 : GENERAL PRIVILEGES

Privileges recommended for Sub Division

(1) For personal domestic use and for agricultural implements, villagers 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) Villagers can take certain fruits viz, Amba, Chinch, Umber, Awla, Karvand and Jambhul from forest areas of Satana and Taharabad.

*****

CHAPTER – II

FOREST FLORA

SECTION 1: TREES

I.II.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 them endemic and red data plant species found in Nashik district *are Achyranthes, nashikensis, Alysicarpus salim ali, Aspidopteris canarensis, Barleria gibsonoides* .

SECTION 2: GENERAL DESCRIPTION OF THE GROWING STOCK

I.II.2.1 The forests of Malegaon Sub Division have been broadly divided into two types according to two different zones on the basis of variations in climate and topography. These two main types along with their sub-types are described as follows:

1) **Sub Group 5A- Southern Tropical Dry Deciduous Forest**:
   - i) $5A/C_1$/ - Dry Teak Bearing Forest.
   - ii) Southern Dry Mixed Deciduous Forest.
   - iii) $5A/E_4$ - *Hardwickia* Forest

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

I.II.2.2 SUB GROUP 5A : SOUTHERN TROPICAL DRY DECIDUOUS FORESTS This can be divided on the basis of local variations as follows :

I.II.2.3 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 Shathawari (*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 north west of Satana in Malegaon Sub division. Following sub-type is seen within these forests (i.e. Dry Teak bearing forests 5A/C1):

I.II.2.4 GENERAL FLORISTIC :

I) **Top Canopy** : Teak (*Tectona grandis*), Dhawda (*Anogeissus latifolia*), Sadada (*tomentosa*), 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 (*Wrightia 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*) .

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

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

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*) .

V) **Chillar** : *Caesalpinia seppiaria*.

I.II.2.5. *HARDWICKIA* FOREST (5A/E_4) : This type of forests occur in north east of Baglan and Malegaon taluka of Malegaon Sub 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.

I.II.2.6 GENERAL FLORISTIC :

I)	**Top Canopy**	:	Anjan, Modhal, Kakad, Bondara, Kadhai
II)	**Second Storey**	:	Albizzia, Dhaman, Dhawda, Salai, Khair, Tendu, Apta, Palas, Ghatbor, Aonla & Bel .
II)a)	**Bamboo**	:	Absent.
III)	**Shrubs**	:	Henkal, Amoni ,Pithoni, Sabar, Tarwad.
IV)a)	**Herbs**	:	Tarota, Unhali, Buranda.
IV)b)	**Grasses**	:	Kusal, Fulora
V)	**Chillar**	:	Chillar

I.II.2.7 SOUTHERN TROPICAL THORN FOREST (6A/C_1): This type of forest is situated in north east of Baglan and Malegaon taluka 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,Neem, Babhul .
IIa)	**Bamboo**	:	Absent.
III)	**Shrubs**	:	Henkal,Amoni,Pithoni,Hiwar, Karwand, Tarwad, Gultura, Bor, Sabar, Nagphani/ Phadya Niwadung .
IVa)	**Herbs**	:	Tarota, Gokhoru
IVb)	**Grasses**	:	Kusal, Tambadgota, Rosha, Phulora .

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

A/2 – Salt Swamp

A/4- *Halophilous* Pseudo-*Stalophilous* Pseudo-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 in 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.

1. List of the common trees, shrubs and grasses . found in Malegaon Sub Division is given in **Appendix I.II.1**
2. List of pioneer tree species is given in **Appendix I.II.2.**
3. List of Endemic and Endangered plants found in Malegaon Sub Division is given in **Appendix I.II.3.**

SECTION 3: STATUS OF NATURAL REGENERATION:

I.II.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.

SECTION 4 : INJURIES TO WHICH THE CROP IS LIABLE

The statement showing the number of offence cases detected during last ten years in Malegaon Sub Division is given in **Appendix I.II.4**

I.II.4.1 FOREST FIRES –

Frequent fires damage the forests to a 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 . also the fires are set by the villagers. The information in respect of forest areas burnt during the period 2002-03 to 2012-13 is given in the following table.

Table No. – 1

Statement showing information in respect of forest areas burnt during the period 2002-03 to 2011-12

YEAR	NUMBER OF CASES	TOTAL BURNT AREA	LOSS (in Rs.)
2002-03	16	159.50	34350/-
2003-04	19	210.00	41000/-
2004-05	14	48.90	11450/-
2005-06	17	214.85	35350/-
2006-07	12	54.00	33750/-
2007-08	28	241.00	45500/-
2008-09	10	28.30	15080/-
2009-10	12	141.00	67000/-
2010-11	15	90.70	10450/-
2011-12	13	45.80	10900/-
2012-13	12	30.05	5675/-

Also, following expenditure was incurred on fire tracing.

Table No.- 2

Statement showing information in respect of expenditure incurred on fire tracing during 2002-03 to 2011-12

Sr.No.	Year	Length (Kms)	Exp (in Rs.)
1	2002-03	37.432	**22667**
2	2003-04	48.00	**32033**
3	2004-05	22.00	**16932**
4	2005-06	138.890	**77074**
5	2006-07	233.940	**103837**
6	2007-08	518.820	**211911**
7	2008-09	105.000	**65038**
8	2009-10	53.060	**44040**
9	2010-11	153.380	**195057**
10	**2011-12**	**3.560**	**19112**

I.II.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. Range wise information regarding the cattle population as per the latest reports received from Malegaon Sub Division is given in the following table

Table No.- 3

Statement showing information in respect of Cattle population

RANGE	CATTLE POPULATION
Malegaon	216943
Satana	75659
Taharabad	161395

Statement showing the details of village wise human and cattle population in Malegaon Sub Division is given in **Appendix I.II.6**

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

I.II.4.3 ILLICIT FELLING : Local villagers fell trees for their livelihood and for using them as firewood. The forest dwellers generally cut large trees injaili to renew their hutment **.** Statement showing loss on account of illicit felling during 2008-09 to 2011-12 in Malegaon Sub Division is given in **Appendix I.II.5**

I.II.4.4 ENCROACHMENT: Encroachments have been serious problem in these areas since long. Unauthorized cultivation and thereby destruction of forest is rampant and measures taken by the forest dept. to control it has only limited effect .Besides decision taken by the government to regularize the eligible encroachments has also given wrong message to the local people, especially to those who are involved in such illegal activities. Years after years some of the forest area is being encroached upon and the extent of the encroachment in surrounding forests areas is extending. Besides taking of plantations in these areas is not allowed by local people. However, the forest department is taking efforts to control this problem to the extent possible.

1. Statement showing the information of encroachment on forest area after 1980 in Malegaon Sub Division is given in **Appendix I.II.7.**
2. Statement showing the information of eligible and ineligible encroachment on forest area as per FRA in Malegaon Sub Division is given in **Appendix I.II.8.**

I.II.4.5 TAHAL CUTTING: . In Taharabad and Satana ranges, the villagers are used to practice of rab burning to raise their nurseries for crops like Nagali and Rice. For rab burning and in Malegaon Taluka for grazing, they resort to heavy lopping and sometimes they fell even available timber tree irrespective of their species. Even 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 are causing great damage to the tree growth.

I.II.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

Malegaon Forest Sub-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

I.II.5.1 List of wild animals species found in Malegaon Sub Division is given in **Appendix I.II.9.**

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), Black Buck (*Antilope cervicapra*), Indian Wild Bore (*Sus scrofa*)

SECTION 6: Birds

I.II.6.1 Many species of migratory and resident birds are found in Malegaon Sub Division Migratory birds are mostly found near the water bodies of dams and ponds. List of birds species found in Malegaon Sub Division is given in **Appendix I.II.9**

SECTION 7: Reptiles

I.II.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*) and Rat Snake (*Ptyas nucosus),* Indian Monitor Lizard( )

SECTION 8: Fishes

I.II.8.1 The common 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* and, *Labeb beggut* ,

SECTION 9: INJURIES TO WHICH FAUNA IS LIABLE

I.II.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.

I.II.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 frequenting the villages and causing the damage out side the forest area.

1. Detail information on death of wild animals and the reason of death during 2002- 03 to 2011-2012 is given in **Appendix I.II.10.**
2. Detail information on the number of offence cases regarding fauna during 2003- 04 to 2011-2012 is given in **Appendix I.II.11.**

I.II.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 pig particularly during the period of festivity.

I.II.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

I.II.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 . 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 . 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

I.III.1.1 The tract is mainly inhabited by Koli, Varli, Konkani, Bhilla, Thakar, Maratha and other non tribal communities. 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.

I.III.1.2 Agriculture is the main occupation of the local population . Agricultural population mainly consists of Marathas, Malis, Dhangars, Kolis, Vanjaras, Thakars, 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 Mosam, and Aram basin. These lands are highly fertile. Consequently , this belt is very prosperous and the main crops are wheat, bajara, sugarcane, onion, groundnut, pomengrate, grapes, vegetables .

I.III.1.3 The main requirement of the people from the forests 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 forests for grazing their cattle and

collect numerous NTFPs from the forests 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 forests causing its rapid depletion.

SECTION 2 : THE MARKET AND MARKETABLE PRODUCTS

I.III.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 .

I.III.2.2 There are many valuable timber species found in this area such as teak, khair, ain, dhawada, haldu, neem, anjan . 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 cutting 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. Mostly in north east areas of Malegaon sub division the practice of lopping the anjan leaves by local farmers is observed for their cattle.

Grass for cattle and packing the vegetables and fruits is also in great demand. In the past, Malegaon Sub Division used to auction these kurans. But now these kurans are with JFM Committees . Malegaon, Satana and Taharabad 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. The statement showing the permit rates for different NTFP for last ten years from 2002-03 to 2011-12 is given in **Appendix –I.III.2**

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

I.III.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.

I.III.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 Sub division.

I.III.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 meets their requirement at the time of extraction of this produce during last few years is given as below.

Table No. 1

Details of the timber and fire wood extracted by the Malegaon Sub division

Sr. No.	Year	Timber (Cum)	Firewood (Cum)
1	2008-09	0.269	**43.647**
2	2009-10	22.601	**21.807**
3	**2010-11**	**28.604**	**66.375**

But, the present condition of the forest can not meet out the entire requirement of the local people from forest area. Due to 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

I.III.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, Malegaon Sub 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 . are collected through Tribal Development Corporation.

Statement showing the permit rates for different N.T.F.P for last ten years from 2002-03 to 22011-12 is given in Appendix I.III.1

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 Wages Committee' headed by CCF(T)Nashik. Every year these rates are revised. The copy of the current wages rates (2012-2013) is given in the **Appendix I.III .1**

SECTION 5 : LINES OF TRANSPORT

I.III.5.1 There is a very good network of the roads in the Sub 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 No. 3	043.00 Km.
ii)	Malegaon Satana State Highway No. 21	037.00 Km.
iii)	Kusumba Malegaon Nandgaon State Highway No. 16	065.00 Km.
iv)	Taharabad Malegaon Chalisgaon State Highway No. 5	001.30 Km.
v)	Vinchur Prakash State Highway	031.00 Km.

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.

There are no forest roads (roads in charge of forest Deptt.) in Malegaon Sub Division.

SECTION 6 : PAST AND CURRENT PRICES

I.III.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 has increased two to three times during last decade depending upon the type of forests produce.

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CHAPTER-IV
FIVE YEAR PLANS

SECTION 1: INTRODUCTION

I.IV.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 12th five year plan is in progress since 2012 and will end in 2017. 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 Programme 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

I.IV.2 India has around 19.50 percent geographical area under forest with a rich bio-diversity as India is a mega biodiversity nation. 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

I.IV.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. Such as 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.

I.IV.3.2 In the mean time, Malegaon Sub 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.

I.IV.3.3 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). Hence, it was intended to improve the fodder quality and productivity of these areas and give a boost to the occupation of cattle breeding and dairy.

I.IV.3.4 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. 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.

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CHAPTER –V

STAFF AND LABOUR SUPPLY

SECTION 1: STAFF

I.V.1 There are three ranges in Malegaon Sub Division. The Malegaon Sub Division is having its head quarter at Malegaon and is headed by an Sub Divisional Forest Officer. The present sanctioned strength of field and ministerial staff in the Malegaon Sub Division is as follows:

TABLE – I

Statement showing present sanctioned strength of field and ministerial staff in Malegaon Sub Division

Sr.No.	Name of Post	No of Posts
1	Sub Divisional Forest Officer	**1**
2	Range Forest Officer	**5**
3	Chief Accountant	**1**
4	Accountant	**5**
5	Surveyor	**1**
6	Clerk	**5**
7	Driver	**1**
8	Forester	**19**
9	Forest Guard	**59**
10	Mali	**1**
11	Peon	**1**
12	Vanmajur	**65**
	Total	**164**

The list of officers who held the charge of Malegaon Sub Division (Part of old East Nasik Division) and East Nashik Division is given in **Appendix I.V.1**

SECTION 2: LABOUR SUPPLY

I.V.2 Main activities of the forest department in Malegaon Sub Division includes afforestation, soil and moisture conservation works and repairs of forest roads and 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 Malegaon Sub Division. 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, Bhillas, Varlis, and Kathodis, are 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 Pomengrate 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 Wages Board Committee. Few of the job rates are fixed by the Government, under various schemes like MGNREGS.

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CHAPTER - VI

PAST SYSTEMS OF MANAGEMENT

SECTION 1: GENERAL HISTORY OF FORESTS

The forest of Malegaon Sub Division falls in Above Ghat Forest.

I.VI.1 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 was 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 sub division, a judicious combination of clear felling and improvement felling were prescribed. The closure could not be affected 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. Generally, results of plantations are not encouraging. Due to non availability of authentic records, analysis of all the plantations could not be possible.

SECTION 2 : PAST SYSTEM OF MANAGEMENT AND THEIR RESULTS

I.VI .2 Working Plans of B.P.Singh, D.Y.Deshmukh and A.K.Mishra (2002-03 to2011-12):

It was the first consolidated working plan for Malegaon Sub Division The plan prescribed treatment for 81607.413 ha. of forest area. Out of which the following areas have been given treatment under various working circles up to 2011- 12.

Table No. -1

Statement showing area of present Malegaon Sub Division treated as per B.P.Singh Working Plan for East Nashik Division

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	11114.343	-	1080.24	-
2	Afforestation WC	37714.185	1845.321	1407.206	-
3	Improvement WC	11127.867	1412.35	825.336	-
4	Fodder Management WC	3254.756	50	-	-
Total		**63211.151**	**3307.673**	**3307.782**	**-**

In total, seven working circles were constituted for the management of forests. 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 was 11114.343 ha. Out of this area, SMC works have been taken up in 1080.24 ha. up to 2011-12. 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 11127.867 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 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 in 1412.35 ha of area. Similarly, SMC were taken on 825.336 ha. All the areas assigned to this working circle could not be attended due to shortage of funds. The blank areas of this working circle have been planted and results are not satisfactory. The summary of survival percentage of these sites is given as 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 needs to be improved. The root stock should be given the treatment of cut back, coppicing, singling as per the requirement of the crop.

Table No.-2

Statement showing number of sites as per survival percentage in Improvement Working Circle areas of Satana and Taharabad ranges.

Sr.No.	Year	Total sites	No. of sites as per survival percentage			
			<40%	40-60%	60-80%	>80%
1	2003	04	02	02	-	-
2	2004	-	-	-	-	-
3	2005	05	04	01	-	-
4	2006	04	03	01	-	-
5	2007	06	05	01	-	-
6	2008	03	-	03	-	-
7	2009	06	05	-	01	-
8	2010	04	03	01	-	-
9	2011	03	-	03	-	-
10	2012	03	-	03	-	-
Total		**38**	**22**	**15**	**01**	**-**

(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 was37714.185 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 1407.206 ha area up to 2011-12. The area of five coupes have been covered. The actual area planted in these five coupes is 1845.321ha. 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 and irregular rains.

ii) Illegal grazing and 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 increase forest cover and 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.

Table No.- 3

Statement showing number of sites as per survival percentage in Afforestation Working Circle areas of Malegaon, Satana and Taharabad ranges.

Sr. No.	Year	Total sites	No. of sites as per survival percentage			
			<40%	40-60%	60-80%	>80%
1	2003	02	-	-	01	01
2	2004	02	01	01	-	-
3	2005	-	-	-	-	-
4	2006	13	01	08	01	03
5	2007	19	05	02	08	04
6	2008	12	02	10	-	-
7	2009	03	-	01	02	-
8	2010	04	-	04	-	-
9	2011	07	01	01	03	02
10	2012	10	-	06	04	-
Total		72	10	33	19	10

(4) Kuran Working Circle :

This working circle included the *kuran* areas of Malegaon *taluka.* 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 3254.756 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 50 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 11127.867 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 forests, 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 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 50500 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. 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 3: SPECIAL WORKS OF IMPROVEMENT TAKEN:

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

Improvement Works

Plantations (Ha)	SMC Works (Ha)	Tending Operations(ha)
3307.673	3307.782	-

The statement showing information of various plantations done under plan scheme from 2002-03 to 2010-11is given in **Appendix I.VI.1**

SECTION 4 : PAST YIELD

6.4 The yield of timber and firewood for the period from 2002-03 to 2012-13 is given below.

1. Statement showing the details of the yield of timber and firewood for the period from 2002-03 to 2012-13 is given in **Appendix I.VI.2**

2. Statement showing the details of the annual out turn for N.T.F.P is given in **Appendix I.VI.3**

Table No.- 4

Statement showing the details of the yield of timber and firewood for the period from 2002-03 to 2012-13

Sr. No.	Year	Timber(Cum)	Firewood (Cum)
1	2002-03	0	**0**
2	2003-04	0	**0**
3	2004-05	0	**0**
4	2005-06	0	**0**
5	2006-07	0	**0**
6	2007-08	0	**25.600**
7	2008-09	0	**0**
8	2009-10	0.269	**93.647**
9	2010-11	22.601	**21.807**
10	**2011-12**	**28.604**	**66.375**

SECTION 5 : PAST REVENUE AND EXPENDITURE

6.5 Total revenue and expenditure for the period from 2002-03 to 2011-12 is given in **Appendix I.VI.4** 2009-10 to 2012-13 is given as below.

Table No.- 5

Statement showing the details of total revenue and expenditure during the period 2009- 10 to 2011-12

Sr.No.	***Year***	***Revenue (lakhs)***	***Expenditure(lakhs)***			***Total Exp.***
			Salary	T.A.	Other	
1	2009-10	00	181.18	2.53	00	1.83
2	2010-11	00	222.77	4.137	00	226.91
3	2011-12	00	264.06	2.013	00	266.07
4	2012-13	00	322.42	2.024	00	324.44

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CHAPTER - VII

STATISTICS OF GROWTH AND YIELD

SECTION 1: STATISTICS OF GROWTH

I.VII.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 No. -1

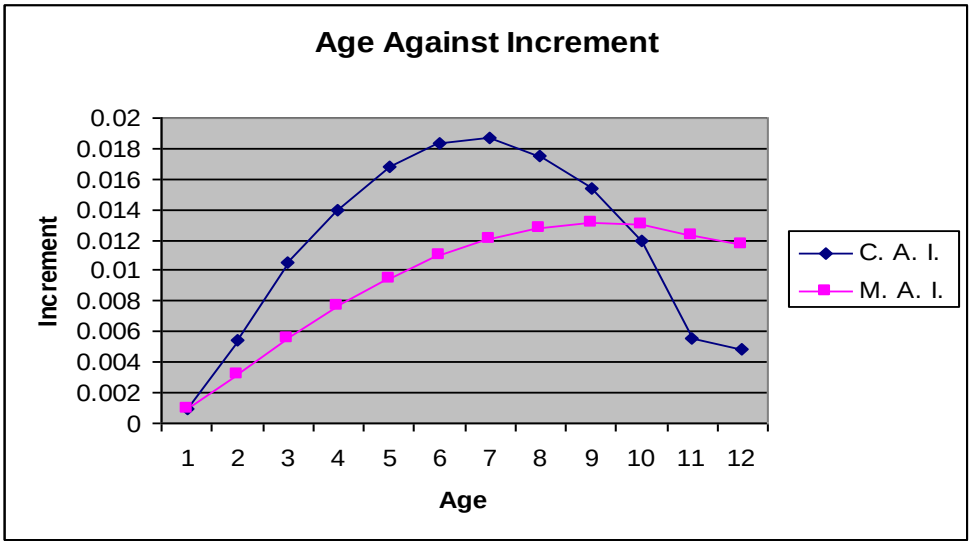
Statement showing the results of the stem analysis

(Site quality III) m^3 (Cubic Meter)

Age (yrs)	Height (mt.)	Diameter (B. H.) *O.B. (cm.)	Standard stem timber volume (m^3)	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

***O.B.-Over Bark**

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 general volume table of important timber species is given as under.

Table No.-2

Statement showing the volume table of important timber species.

Name of Species	Girth Class in Cm.							
	15 to 30	30 to 45	45 to 60	60 to 75	75 to 90	90 to 105	105 to 120	120 & above
Tectona grandis	0.013	0.054	0.148	0.287	0.467	0.693	0.977	1.268
Ougenia ojeinensis	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
Boswellia serrata	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 - I. VII.1.**

SECTION 2: ENUMERATION

I.VII.2.1 The enumeration of trees in the forest area of Malegaon Sub Divison has been carried out by the 'Survey of Forest Resources unit, Nasik in the year 2012-13. Plots of 60x60 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 abstract of enumeration results carried out during the year 2012-13 are given in **Appendix I. VII. 2.**

I.VII.2.2 The number of trees found in the growing stock has been calculated in each working circle. The weighted average of the number of trees in the growing stock comes to 31.660 trees per hectare.

Table No. - 3

Statement showing the comparison of the past and present enumeration.

Past Enumeration			**Current Enumeration**		
Sr. No.	Working Circle	No.of trees Per Ha.	Sr. No.	Working Circle	**No.of Trees per Ha.**
1	Protection W.C.	55.441	1	Protection W.C.	**20.133**
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. *	**34.774**
6	Afforestation W.C.	17.640	3	Afforestation W.C.	**35.275**
7	Fodder Management W.C.	29.600	4	Fodder Management W.C.	**38.308**
			5	Area recently handed over by FDCM to Territorial Division.**	**35.252**
Weighted Average Trees / Ha 31.660					

* 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.

The previous enumeration in this area was carried out combined for East Nashik Divison and Malegaon sub division. 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 Divison 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.

I.VII.2.3 It is worth to note that in the current enumeration that 79.502 per cent trees in the growing stock are below 45cms girth and only 20.495 per cent trees are in the higher girth classes. It shows that the most of the crop is young .

Table No. - 4

Statement showing the Per centage 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.	57.378	22.654	19.968	100
2	Improvement W.C.	49.068	20.43	30.719	100
3	Afforestation W.C.	58.44	26.325	15.461	100
4	Fodder Management W.C.	27.684	22.316	50.00	100
5	Area recently handed over by FDCM to Territorial Division	48.752	34.894	16.354	100
	Pasture W.C.	44.64	32.152	23.227	100
Weighted Average		**54.191**	**25.31**	**20.495**	**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, 17.71 per cent trees are in the general utility class. The special utility and minor forest produce categories comprise of 18.72 and 5.39 per cent respectively. The utility class mainly comprises of teak, ain, tiwas,

bija . The special utility class includes trees such as Anjan, Dhawada, Hiwar, Khair, Kudai, Salai, Sawar & Shiwan The species of Minor Forest Produce are Amba, Apta, Bel, Chinch, Karwand, Moha, Neem, Nilgiri, Palas, Shiras & Tendu. The number of trees as per current enumeration falling in to various categories are as given as below.

Table No.- 5

Statement showing trees in various Categories

Sr. No.	**Category**	**Total trees per ha**	**General Utility Spps.**	**Special Utility Sp.**	**Minor Forest Produce Spps.**	**Other Spps.**
1	Weighted Average	31.660	5.608	5.928	1.705	**18.419**
2	**% of total stock**	**100**	**1785**	**0**	**58.92**	**23.23**

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

Table No.- 6

Statement showing details of teak in growing stock

Sr. No.	**Working Circle**	**Total Trees /ha**	**Teak trees/ha**	**% of teak to Total Stock**
1	Protection W.C.	20.133	5.349	**26.570**
2	Improvement W.C.	34.774	0	**0**
3	Afforestation W.C.	35.275	1.960	**5.560**
4	Fodder Management W.C.	38.308	0	**0**
5	Area recently handed over by FDCM to Territorial Division	35.252	21.590	**61.240**
	Pasture W.C.	1.636	0.292	**17.850**
Weighted Average		**31.660**	**3.03**	**11.00**

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 the Malegaon Sub Division (due to carving out Malegaon Sub – division), the weighted averages of previous enumeration and weighted averages of current enumeration are not comparable.

1.The statement showing estimated growing stock –No. of sound trees is given in **Appendix I. VII . 3.**

2.The Statement showing estimated growing stock number of sound trees per Ha. is given in **Appendix I. VII. 4.**

3. The Statement showing per centage distribution of total stock of a species overall girth class is given in **Appendix I. VII.5.**

4**.** The Statement showing per centage of total stock of a species in a girth class to the total stock in that particular girth class is given in **Appendix I. VII .6.**

5. The Statement showing estimated growing stock volume in cubic meter per ha is given in **Appendix I. VII .7.**

SECTION 3: YIELD

I.VII.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 250 Cu M. and 400 Cu M. respectively. There will be purely silvicultural felling.

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PART - II

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER - I

BASIS OF PROPOSALS

SECTION 1 : NATIONAL FOREST POLICY

II- 1.1.1 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, Non timber 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 along with 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

II-1.1.2 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.

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

II-1.2.1 Government of Maharashtra vides 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

II-1.3.1.

1. There is a huge demand for timber, poles, fuel wood and bamboo in the nearby 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, 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, is 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 2006 has come into existence.

SECTION 4: GENERAL OBJECTS OF THE MANAGEMENT

II-1.4.1 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

II-1.5.1 The Government of Maharashtra vides their Resolution No. MEF-1365/ 132211-Y, dot. 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

II-1.5.2 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.

II-1.5.3 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.

II-1.5.4 MINOR FOREST: This includes forests capable of producing small sized timber, fuel wood and has grazing potential.

II-1.5.5 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

II-1.6.1 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:

II-1.6.2 PROTECTION FORESTS: This type of areas is allotted to protection working circle. These areas are scattered all over the Sub division. Some of the 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 14537.843 ha.

II-1.6.3 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 4953.908 ha.

II-1.6.4 MINOR FORESTS: This category of forest is capable of producing small sized timber, fire wood and grasses. This area will be regenerated through suitable tending operations. Plantations of suitable species will be taken up in blank patches along with adequate Soil and Moisture Conservation works. These areas have been allotted to Afforestation or Improvement Working Circle. . The forest area under this classification is 7194.174 ha.

II-1.6.5 PASTURE LAND: This includes areas under grass Kurans. The object of management in this 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 3287.826 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. The Statement showing the results of stock mapping by compartment and villages is given in **Appendix II.I.1**

On basis of stock mapping results formation of various working circles has been done. The statement showing details of forest areas by ranges, compartment and villages allotted to various working circles is given in **Appendix II.I.2**

Table No. - 1

Statement showing formation of working circles for future management.

Sr. No.	Working Circle	Area allotted (ha.)	Percentage of area allotted
1	Protection Working Circle.	14537.843	17.81 %
2	Improvement Working Circle.	4953.908	6.07 %
3	Afforestation Working Circle.	46670.335	57.19 %
4	Fodder Management Working Circle	3287.826	4.03 %
5	Old Plantation Management Working Circle	2240.266	2.75%
6	Miscellaneous Working Circle	9917.235	12.15 %
7	Wildlife (Over lapping) Working Circle	81607.413	100 %
8	Joint Forest Management (Overlapping) Working Circle.	81607.413	100 %
9	Forest Protection (Overlapping) Working Circle.	81607.413	100 %
10	NTFP (Over lapping) Working Circle.	81607.413	100 %
11	Bamboo (Overlapping) Working Circle.	1228.876	1.50 %

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

Table No.-2

Statement showing constitution of new working circle from old working circles

Sr. No.	Proposed Working Circle	Area (ha.)	The Working Circle from which area has been derived from previous Working Plan.				
			P.W.C	I.W.C.	A.W.C	Kuran W.C	Misc. W.C.
1	Protection W.C.	14537.843	11114.343	6173.959	8956.251	--	--
2	Improvement W. C.	4953.908	--	11127.867	--	--	--
3	Afforestation W. C.	46670.436	--	11127.867	37714.185	--	--
4	Fodder Management W. C.	3287.826	--	--	--	3254.756	33.00
5	Misc. W. C.	9917.235	--	--	--	--	18396.663
		81607.413	**11114.343**	**28429.693**	**46670.436**	**3254.756**	**18429.663**

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 14537.843 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 4953.908 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 . The total area allotted to this

working circle is 46670.335 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 3287.826 ha.

5. OLD PLANTATIONS MANAGEMENT WORKING CIRCLE:

The object of this working circle is to manage the old plantations by cleaning and using various tending operations. The old successful teak plantations will be cleaned and thinned as per the yield table. In the successful Gliricidia plantations, suitable openings will be created to introduce the other local species.

6. MISCELLANEOUS WORKING CIRCLE:

This working circle includes 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 9917.235 ha.

7. 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.

8. JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE:

This working circle envisages protecting the forest and wildlife with active participation of local communities. Already, large number of Joint Forest Management committees has been formed in villages. There is a need to strengthen this movement. The total area allotted to this working circle is 81607.413 Ha.

9. FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE:

The area is having high incidences of illicit felling, encroachments, and grazing, lopping and forest fires. In some parts, there is severe problem of illicit felling particularly in the area bordering Gujarat state and there is a perpetual problem of unabated encroachment on forest land in the tribal belt, making all the efforts of management intervention futile. Therefore the object of this working circle is to protect the forest from these maladies the total area allotted to this working circle is 81607.413 Ha.

10. 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 81607.413 Ha.

11. BAMBOO (OVERLAPPING) WORKING CIRCLE:

Some compartments of Satana and Taharabad ranges contain bamboos. Such compartments have been kept in this working circle. The area allotted to this working circle is1228.876 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 and implementing with inter cultural operations 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. (2014-2015 to 2023-2024).

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PART II - CHAPTER - II

WORKING PLAN FOR THE PROTECTION WORKING CIRCLE

SECTION 1 : GENERAL CONSTITUTION

II-2.1.1 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 is 14537.843 ha. which is about 17.81 percent of the total forest area of this Working Plan. The range wise detail of area of this working circle is given below.

Table No.-1

Statement showing the Range wise detail of area of P.W.C.

Sr.No.	Range	Total area of range Ha.	Area allotted to working circle	Percentage of range area
1	Malegaon	33814.624	3714.133	**10.98%**
2	Satana	21253.564	5241.077	**24.66%**
3	Taharabad	26539.225	5582.633	**21.04%**
Total		**81607.413**	**14537.843**	**17.81%**

SECTION 2 : GENERAL CHARACTERS OF THE VEGETATION

II-2.2.1 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 "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 dominant species has been observed.

SECTION 3 : SPECIAL OBJECTS OF MANAGEMENT

II- 2.3.1

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

II-2.4.1 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.1**. The total forest area allotted to this working circle has been divided into 16 Working Series and each Working Series is divided into 10 coupes.

SECTION 5: ANALYSIS AND VALUATION OF THE CROP

II-2.5.1 Stock-mapping: The stock mapping of these areas has 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 good vegetation on slopes and in valleys, whereas the top plateaus are mostly devoid of vegetation due to lack of soil.

II-2.5.2.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 delphic factors, influencing growth. Teak is the most prominent species followed by ain, neem, kansar, babhul gliricidia . The result of the tree enumeration is given below.

Table No- 2

Statement showing the No. of trees per hectare

Girth Classes (cms)			
16-30	**31-45**	**Remaining Girth Class**	**Total**
54.191	**25.314**	**20.495**	**100**

SECTION 6 : METHODS OF TREATMENT

II-2.6.1 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 and endemic plants found in Malegaon Sub Division is given in Appendix **I.II.3.** 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 by consistently preservation plots. Some studies have been done in Medicinal Plants Conservation area reveals the abundance of medicinal plants of ethno-medical systems. These areas are neither to be harvested nor to be worked under any silvicultural system.

1. The coupe due for working will be demarcated one year in advance.

A 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 Egomania Terrain model, which will give a fairly good assessment of area under consideration.

2. No harvesting of any type of trees like deceased, dying and malformed is recommended except dead tree.

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. The rich biodiversity of these areas will be studied and shall be documented. The steep rocks and plateau may be the most important habitat of rare plants, birds and wild animals. The nesting sites of threatened long- billed Vultures and white

backed Vultures have been found in the crevices of rocks and on tall trees in the valleys of such areas.

5. Seed-dibbling of the pioneer species like *Acacia catechu*, *Dalbergia 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 and 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..

6. 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.

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

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

SECTION 7 : WORKING CYCLE

II-2.7.1 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 protection scheme shall be prepared by Sub D.F.O. and concerned C.C.F. 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 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.

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PART II

CHAPTER-III

WORKING PLAN FOR IMPROVEMENT WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-3.1.1 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 4953.908 ha which is 6.07 percent of the total forest area of this Sub Division. The range wise detail of this area is given below.

Table No.-1

Statement showing the Range wise detail of area of I.W.C.

Sr.No.	Range	Total area of Range (ha.)	Area allotted to Working Circle	% of range area
1	Malegaon	33814.624	2240.677	6.63%
2	Satana	21253.564	671.657	3.16%
3	Taharabad	26539.225	2041.574	7.69%
Grand Total		81607.413	4953.908	6.07%

SECTION 2: GENERAL CHARACTERS OF THE VEGETATION

II-3.2.1 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 and length 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 . Suitable tending operations along with gap filling through artificial regeneration will definitely improve the crop.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

II-3.3.1. To improve the condition of the growing stock through various silvicultural operations and fill up the gaps through artificial regeneration.

II-3.3.2. To improve the productivity of the forest in order to harvest the sustained yield in future.

II-3.3.3. To meet the demand of local people regarding small timber and fuel wood.

SECTION 4: ANALYSIS AND VALUATION OF THE CROP

II-3.4.1 - Stock mapping: The stock mapping in this area reveals that most of the area is having young to middle aged crop. The results of stock mapping are presented below.

Table No. - 2

Statement showing the result of stock mapping in I.W.C.

Sr.No.	Range	Well stocked	Total Area (ha.)
1	Malegaon	2240.677	2240.677
2	Satana	671.657	671.657
3	Taharabad	2041.574	2041.574
Grand Total		**4953.908**	**4953.908**

II-3.4.2- Enumeration: The tree enumeration work has been done in Malegaon Sub Division and the results are presented below. The main timber species found in the crop are teak, *ain, anjan, dhawda, palas, behda, tiwas* .

No. of trees per hectare

Table No.- 3

Statement showing the number of trees in I.W.C.

(As per tree enumeration)

		Girth Classes(cms)	
16-30	31-45	Remaining Girth Class	Total
49.068	20.213	30.719	100

SECTION 5: SILVICULTURAL SYSTEM

II-3.5.1 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 favorable for regeneration to respond well. On the contrary, in the present case, this will facilitate cultivators to grow agri. crop with less trouble as presently almost entire floor of the forests. This will indirectly promote encroachment and the practice of agro cultivation. These crops 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 if needed. 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

II-3.6.1 The area allotted to this working circle has been divided into 5 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

II-3.7.1 The improvement cycle has been fixed at 20 years as the period is sufficient for establishment of the regeneration.

SECTION 8: REGULATION OF YIELD

II-3.8.1 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.

II-3.9.1 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 west areas of Satana and Taharabad ranges as compared to those in other areas. Therefore, method of treatment in these areas of the working circle will be different from that of in other areas. 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 J.F.M. Once they are motivated the actual management will be done by preparing micro plan and prescribing the detailed management prescriptions therein. 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.

II-3.10.1 DEMARCATION: The annual coupes due for working will be demarcated one year in advance. If necessary, the coupes will be divided into sections.

11.3.10.2 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. 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.

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 1067.405 Ha. area of plantations raised in the Sub 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. 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..

SECTION 11: NATURE OF TREATMENT

II-3.11.1 Marking of Trees: The marking of trees will be done under strict supervision of RFO. Sub DFO concerned will verify the marking of all the coupes and 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'.

II-3.11.2 Treatment for area 'A':

1. No tree shall be marked for felling.
2. These areas have steep and precipitous slope so the SLC recommends not to take SMC works in these areas. As most of the water goes as runoff 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 can be taken after visit and recommendation of A.C.F. as per the need of the geographical situation.

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 for naturally germinated seedlings of *Dalbergia sissoo*, *Dalbergia latifolia*, *Dalbergia paniculata*, *Glericedia maulata* ,*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. Bush sowing of seeds of suitable species like neem, khair, babul, semal, maharukh, sandalwood, 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 Section 12.3,12.1.

II-3.11.3 Treatment for area 'B': 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.

As these are the under stocked areas, the plantation activity will be taken up in blank patches. 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.

1. The list of various plantation models is given in the **Appendix No.II.IV.2**.
2. The nursery technique of medicinal plants is given in the **Appendix No.II.IV.3**.

II-3.11.4 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 thinning regime.

II-3.11.5 CLEANING: The plantation will be cleaned in 7th year of its formation. However it will be cleaned only it requires cleaning as per the report of Sub Divisional Forest Officer Malegaon. No plantation will be cleaned unless a detail treatment map of the area to be cleaned is delineated on the map. The area with the successful plantation will be cleaned and only teak plantation will be cleaned. Exceptionally good and congested plantations require cleaning operation. If it is found fit for cleaning, following operations will be carried out.

1. All the multiple shoots will be reduced to one or two depending upon the type of plantation.
2. Retention of suitable climbers e.g. medicinal species is recommended while common climbers species affecting fair growth of other main crip should be cut.
3. All the unwanted bushes interfering with the growth of planted saplings will be removed.
4. Malformed, diseased and damaged individuals of the planted saplings will also be cut back.

II-3.11.6 THINNING: It is one of the tending operations required in plantations to improve the growth and form of trees. After few years of planting, saplings compete with each other for light, space and food. Unless proper conditions are provided, the saplings do not attain the optimum growth and form. To avoid any adverse impact on future crop, the number of saplings is reduced per unit area periodically as the crop advances in age. The period between two successive felling is fixed depending upon the time required for canopy closure of the crop. Only the silvicultural thinning will be carried out and this will start only after the canopy differentiation has started. No mechanical thinning has been prescribed.

Thinning in Teak Plantations: The thinning in teak plantations will be done after 10, 20, 30 and 40th year of plantation. A ten year cycle has been prescribed to prevent knot formation in the wood . The thinning will be done as per the yield table

and it will be C grade silvicultural thinning. The site quality of the area will be determined from the average height of the dominant trees in the plantation area. The girth wise distribution of plants will be ascertained by laying the random sample plots of 0.50ha area. Approximately 10% area will be taken for sample plots. The number of plants to be retained as per the age and site quality will be obtained from FRI Yield Table. The retention will also be regulated through basal area. The excess number of plants will be removed uniformly distributed in every girth class. The deficiency of plants in any girth class will be compensated with the surplus of the nearest girth class. The basal area of the stand marked for thinning will be obtained excluding the trees marked for thinning. This will be compared with the Yield Table value of basal area for that year. Any excess or deficiency of basal area will be rectified and marking will be completed for thinning .The marking must be checked by the RFO and Sub DFO before the thinning is carried out. A ten year thinning regime has been prescribed so as to procure a straight bole. The following rules for thinning will also be followed.

1. First the inferior individuals in the crop such as dead poles will be marked for thinning. Then suppressed and dominated pole in the crop will be marked preferably. Some of the co-dominant trees/poles will also be removed depending upon the total number of trees to be removed in each girth class. But care will be taken that no permanent gap is created in the canopy.

2. The poles of coppice origin will be given priority over the poles of seed origin at the time of marking for removal.

3. The established coppice shoots will be reduced to one in case it requires retention.

4. The undesirable growth competing with teak plants will be removed at the time of thinning.

5. Non formation of epicormic branches in subsequent two to three years, will be the index of a satisfactory thinning.

Thinning in Mixed Plantations: The mixed plantations consist of a variety of species. These species usually have different rate of growth and canopy coverage. The purpose of these plantations may also be different. It may for fuel wood, green cover, soil binding to prevent erosion, energy plantations . Therefore, it is very difficult to decide the norms for thinning in mixed plantations. If various species are raised in blocks, the thinning will be carried out in blocks only taking into consideration the nature of the species.

If these plantations require thinning, then a silvicultural thinning called 'Elite Thinning' will be carried out in these plantations. In this thinning, evenly spaced stems of elites are retained up to maturity. All the other species hindering with the growth of elites will be removed. The thinning in these plantations will be carried out after completion of 10, 20 and 30 years of formation. However a mid term thinning may be restored to in case there is a closure of canopy immediately after thinning. The following rules will be observed in this thinning.

1. The whole plantation area will be divided into grids of 0.50 ha. The elite plants will be selected in each grid and ringed at the breast height. A suitable spacing of 4 to 5 meters will be maintained between two elites depending upon the model of plantation.
2. In the first thinning, all the other plants around the elite and competing with it will be removed. Any multiple shoots will be reduced to one.
3. In the second thinning also, the stems interfering with the growth of elites will be removed. If any elite gets damaged during first thinning, it will be replaced by other healthy pole in its surrounding.
4. In third thinning, a C grade thinning will be carried out in which the number of elites will be reduced approximately to $1/3^{rd}$ of the original number. Under no circumstances a permanent gap will be created.
5. In the successful and congested pure Gliricidia plantations, a small opening will be created in the radius of 2 metres at a distance of 10 x10 metres and local shade tolerant species will be introduced in these gaps.

   In this way, the thinning will be completed in mixed plantations. The utmost care will be taken to ensure that there is no unnecessary felling.

   The predominant and co-dominant class of trees should be removed only when the canopy has started interfering. Every tree will be cut with an objective. Senior officers must inspect the site of these plantations regarding the necessity of thinning and method of marking before any thinning is carried out. Number of stem retained may be as per Stand and Yield Table for teak, for that basal area.

II-3.11.7 Treatment for area 'D' :

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

2. All dead 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 e.g. *Lantana.*
6 All climbers will be cut, other than that having medicinal value .The list of climber species to be retained is given in.

SECTION 12: NATURAL REGENERATION

II-3.12.1 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 . 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

II-3.13.1 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.

II-3.13.2 Cleaning Operation: It will be carried out in the 3rd and 6th 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

II.3.14.1 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.

II-3.14.2 Closure to grazing: The annual improvement coupes will be strictly closed for gazing for a period of five years after their working.

II-3.14.3 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.

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PART II

CHAPTER-IV

WORKING PLAN FOR AFFORESTATION WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-4.1.1 This working circle includes the forest areas which are under-stocked, degraded, and 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 46670.335 ha, which is 57.19 percent of the total forest area dealt in this plan. The range wise detail of the area is as given below.

Table No.1

Statement showing the Range wise detail of area of A.W.C.

Sr.No.	Range	Total area of range	Area allotted to working circle	Percentage of range area
1	Malegaon	33814.624	19378.120	57.31%
2	Satana	21253.564	11719.690	55.14%
3	Taharabad	26539.225	15572.525	58.68%
Total		81607.413	46670.335	57.19%

SECTION 2: GENERAL CHARACTERS OF VEGETATION

II-4.2.1 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

II-4.4.1 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. The summary of the area under this working circle is given below.

Table No.1

Statement Showing the result of stock mapping in A.W.C

Sr No	Range	Under stocked	Blank Area	Cultivations	Total Area (ha.)
1	Malegaon	4774.136	7126.794	7477.291	19378.221
2	Satana	7279.226	3039.869	1400.595	11719.69
3	Taharabad	5333.973	7655.737	2582.815	15772.525
Grand Total		**17387.335**	**17822.34**	**11660.761**	**46870.436**

II-4.4.2 Tree Enumeration: The tree enumeration work has been completed in this area and the results are presented below. On an average, there are 35.275 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, kansar, dhawda, glyricidia*. 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 .

Table - -3

Statement showing the number of trees in A.W.C (As per enumeration).

Girth Classes (cms)			
16-30	31-45	Remaining Girth Classes	Total
58.814	26.325	15.4461	100

SECTION 5: AFFORESTATION SERIES, COMPARTMENT AND COUPES

II-4.5.1 The total area of the working circle has been divided into 47 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

II-4.6.1 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 the Sub DFO. 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.

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.

SECTION 7: NATURE OF TREATMENT

II-4.7.1 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.

II-4.7.2 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, gabion 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 of loose boulder bunds in the second year.

(iii) Seeds of local pioneer species like *semel, lendia, tiwas, maharukh, gliricida* will be dibbled in accessible areas having good soil depth. Bulbils of Agave and cuttings of ficus species in moist areas as mentioned in the 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 the Working Plan for Improvement Working Circle.

II-4.7.3 Treatment for Area 'B': These are the under stocked 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.

1.The list of various plantation models is given in the **Appendix No.II.IV.2**.

2. The nursery technique of medicinal plants is given in the **Appendix No.II.IV.3**.

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

Planting of difficult areas –The annual planting target shall be fixed by the Sub D.F.O. Malegoan, Sub Divison. 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* . Few of these species have a prominent taproot system. Tall seedlings of these species with good developed root system will be planted. The list of compatible species for different type of soils is given in the **Appendix II.IV.4.** 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 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 Sub D.F.O. 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.

II-4.7.4 - 1. Pre-Planting Operations: In the first year of plantation, all the preparatory and pre-planting operations will be taken up. The list of various plantation models is given in the **Appendix No.II.IV.2**.

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, 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, contour 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 and Taharabad 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 Sub DFO 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 Indole Butic Acid. The object is to procure planting stocks of desired size at the time of planting. Necessary planning in beds shall be done , so as to get not more than 2000 seedlings per bed. Barring khair , babul 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 Indole 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, diseased and damaged seedlings. Only good stumps/seedlings shall be transplanted in the

polythene bags, for which the field staff should be given proper instructions. Sub DFO 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 Sub DFO 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 Sub DFO Refilling of pits / trenches is an important plantation activity and need to be inspected .

II-4.7.5 - 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

II-4.7.6 - 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% Indole 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 the damaged.

(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 . 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* .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 sub division such as Malegaon, is 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 Malegaon range 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.

II-4.7.7 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.

II-4.7.8 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) Only the most promising stem will be retained out of multiple pole crops

(iv) The climbers on trees will be removed except those having medicinal value e.g. Gulwel etc. . The dead 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.

II-4.7.9 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 if needed.

SECTION 8: OTHER REGULATIONS

II-4.8.1 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 .

II-4.8.2 Closure to Grazing: The coupe will remain closed for grazing for a period of five years.

II-4.8.3 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.

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PART II

CHAPTER-V

WORKING PLAN FOR FODDER MANAGEMENT WORKING CIRCLE

SECTION 1. GENERAL CONSTITUTION

II-5.1.1 This working circle includes the kuran areas of forest areas mainly in Malegaon Taluka. These areas are capable of producing good quality grasses under intensive management. The total area allotted to this working Circle is 3287.826 ha. The distribution of which by ranges is as follows:

Table No. -1

Statement showing the Range wise detail of area of

Fodder Management Working Circle.

Sr No	Range	Total area of Range	Area allotted to working circle	Percentage of range area	Percentage of division area
1	Malegaon	33814.63	3287.826	9.72 %	4.03
Grand Total		33814.63	3287.826	9.72 %	4.03

SECTION 2: GENERAL CHARACTERS OF VEGETATION

II-5.2.1 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* . 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 serial 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 amplexic 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, tufted 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 0.51 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, tufted 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, tufted, 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, tufted upto 90 cm high, branches ascending, culms branched, rooting at brace. Sheath with the spreading hairs.

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

(16) *Panicum flavidum*- Perennial, tufted, 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 slender, bran leaves 3-11x0.9-2.2cm, ovate or ovate-lanceolate, sheaths ciliate.

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

(19) *Paspalum destichem-* culm slender, 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: WORKING SERIES, COMPARTMENTS AND COUPES

II-5 .3.1 (i) A detailed list of compartments allotted to this Working Circle and sequence of working are given in **Appendix II.V.1**

SECTION 4 : SPECIAL OBJECTS OF MANAGEMENT

II-5 .4.1 The objects of management are as follows:

(i) To improve the quality of fodder in the kuran by introducing grasses of better varieties .

(ii) To step up the production of quality grasses and thereby meet the demand for fodder of the adjoining population.

(iii) To improve the soil and water regime in the area situated below the forest lands .

SECTION 5 : METHODS OF TREATEMENT :

II-5 .5.1 Grasses are annual crop and therefore, all the grasslands will have to be attended every year . Methods of treatment will be as follows

a) Treatment map will be prepared every year in advance for fencing, Improvement and S.M.C. (Soil & Moisture conservation) works.

b) The grasslands will be properly protected from animal grazing by making repair in the existing fencing either by TCM/barbed wire and digging TCM where old fencing does not exist. Inner boundary of TCM shall be planted with *Agave* spps. to make it more effective for protection.

c) Works will be carried out by ranges. Total compartments of the grasslands in the range will be grouped into 9 without dividing the compartment. If the number of compartments in a range is less than 9, one compartment will be treated every year till the last compartment. Sequence of working is given in Appendix II.V.1.

d) 5 % area of the annual groups of compartments will be treated intensively which will include soil working, removal of entire bush growth and unpalatable grasses by uprooting them before onset of flowering, seed sowing of good variety of grasses, carrying out weeding and also making use of organic fertilizers to promote the growth of the favoured grasses. For sake of giving such treatment the area will be divided into three classes and different modes of operations will be carried out in them as follows:

1. **Sloppy Area** – In sloppy area having 5-10^0 slope, C.C.T. equivalent to the extent of area to be treated will be undertaken and seed sowing of good variety of grasses on mound of dug-up soil will be done. Mound may be made flat for seed sowing of grasses.

2. **Flat Area –**In flat area having less than 5^0 slope where there is no chance of soil erosion due to ploughing, the extent of area to be treated will be ploughed. It is not desirable to have the area treated only in one patch, however, a number of

patches will be selected and its selection should be done in such a way that seed dispersal from there could cover the maximum area of the grasslands.

3. **Undulating Area**- If the area having lesser degree of ridges and valleys and are undulating, there is chance of soil erosion to take place due to ploughing, in such situation grass beds on flat area, at the rate of 100 grass bed per hectare is to be taken and all other operations as mentioned above will be carried out in such beds.

e) Native grass species may be taken as the better quality grasses for the purpose of seed sowing in area to be treated.

f) Three, two and one weeding in the 1st year, 2nd year and third year respectively will be taken up to remove unpalatable grasses and bushy growth from area treated either by taking grass beds or making CCT or ploughing and where seed of good grasses have been sown. In case of making use of fertilizer as a general policy only organic fertilizer shall be used and it shall be applied only after conducting analysis of the soil.

g) To minimize the percentage of unpalatable grasses in rest of the grasslands, the local people should be encouraged to cut and carry unpalatable grasses when they are tender and palatable. However, the palatable grasses should be cut and carried only after their seed dispersal is over.

h) Soil and Moisture Conservation works like gully plugging and nalla bunding will be taken wherever required. For this purpose also the compartment or group of compartments as mentioned above will be taken and entire compartment/compartments will be treated. Sequence of working is given in Appendix II.V.1

i) Chinkara is found in Malegaon Range. As Chinkara is a browser and therefore, bushes liked by it shall be protected and promoted through possible methods in particular and in general.

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 and guidelines of the working plan and shall be in accordance with various orders of the Hon'ble Supreme Court.

II-5 .5.2 - Grazing will be strictly prohibited in these grasslands. Grass will be disposed of exclusively on cut and carry basis. Existing tree growth will not be removed but tended properly.

II-5 .5.3-To allow fodder grasses to seed and multiply properly, cutting shall not be allowed during monsoon months (July to October).

II-5 .5.4- The grasslands shall be fire protected (Class I Fire Protection) every year before the commencement of fire season.

II-5 .5.5- Grasslands will be disposed of through the concerned Gram Panchayat on priority basis. Only if the Gram Panchayats are not willing to purchase, they will be disposed of by public auction. By doing so the local people will co-operate in protecting these grasslands. Otherwise local people will view these grasslands as not belonging to them causing disinterest in them for protection from grazing and fire. However, during natural calamity, if grass is needed, grasslands may be reserved to any extent.

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PART II

CHAPTER-VI

WORKING PLAN FOR OLD PLANTATIONS MANAGEMENT WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-6.1.1 This overlapping working circle consists of all successful plantations raised in the past and identified for inclusion into this Working Circle. The statement showing the list of old successful plantations is given in **Appendix II.VI.1**.These plantations may be of teak or other miscellaneous species. These will be given the silvicultural treatment as per the provisions enlisted of this working circle, irrespective of provisions of those working circles in which these are located. The total area of this working circle is 2240.268 ha. But largely the area is from Improvement Working Circle. The area chart of the working circle is given below.

Table No.-1

Statement showing area chart of Old Plantation Management W.C.

Range	Plantation site (Nos.)	Afforestation Working Circle (ha.)	Improvement Working Circle (ha.)	Kuran Working Circle (ha.)	**Total Area (ha.)**
Malegaon	34	858.268	0.000	0.000	**858.268**
Satana	13	139.000	241.000	0.000	**380.00**
Taharabad	28	90.000	912.00	0.000	**1002.00**
Grand Total	**75**	**1087.268**	**1153.00**	**0.000**	**2240.268**

SECTION 2: GENERAL CHARACTERS OF THE VEGETATION

II-6.2.1 Several plantations have been raised in the past in this sub-division. These plantations are of teak and miscellaneous species. These have been raised under various schemes of the central and the state government, including Employment Guarantee Scheme. These plantations were intensively managed and protected up to initial five years of its formation. But no operation was taken after the expiry of scheme, under which these were raised. These plantations required a continuous nursing and treatment after the original scheme had ended. Seedlings thus competed with each other for light, food and space. These plantations have become congested

and malformed, hampering their further growth. Some of them have failed due to various reasons such as uncontrolled grazing, forest fires and encroachments.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

1. To manage old plantations by cleaning and using various tending operations.
2. To create the best possible growing conditions for the plantations, by reducing root competition and improving hygienic conditions.
3. To achieve high quality timber from these plantations in future.
4. To achieve maximum return per unit area from plantation.
5. To produce small timber and fuel wood for local consumption.

SECTION 4: METHODS OF TREATMENT

II-6.4.1 The forest plantations are just like horticultural crops. They need to be attended continuously for optimum growth. The successful plantations must be cleaned and tended periodically to achieve maximum returns. For the purpose of treatment, RFO shall prepare the treatment map of all the plantations coming in coupes of this overlapping working circle due for treatment. **The statement showing year wise sequence of working of old successful plantations** is given in **Appendix II.VI.2**

.The successful and unsuccessful blocks shall be clearly demarcated on the map. The successful portion of plantations will be taken up for further treatment and the reasons for failure of the unsuccessful portion of plantations will be analyzed to avoid it in future and the steps will be taken for its recuperation. All the plantations included in this overlapping working circle have completed five years of its formation. The norms for success or failure of a plantation will be as follows

Table.No.-2

Statement showing norms for successful and failure plantations.

Type of site	Successful Plantations	Partially Successful Plantations	Failure Plantations
Suitable sites: Soil depth >2', rainfall 50"-150", average prevalence of adverse biotic factors, gentle to moderate slopes.	60 % and above	33% to 60%	Less than 33%
Medium quality sites: Soil depth >1' rainfall 35"-50", average prevalence of adverse biotic factors, moderate slopes	50% and above	25% to 50%	Less than 25%
Poor sites: Soil depth < 1', rainfall < 35" or 125", excessive prevalence of mist and fog, adverse biotic factors	40% and above	20 % 40 %	Less than 20 %

Once the successful and unsuccessful sites have been identified and demarcated, following treatment will be given as per the requirement of the crop.

II-6.4.2 CLEANING: The plantation will be cleaned in 7th year of its formation. However it will be cleaned only if it requires cleaning as per the report of RFO (concerned). No plantation will be cleaned unless a detail treatment map of the area to be cleaned is delineated on the map. The area with the successful plantation will be cleaned and only teak plantation will be cleaned. Exceptionally good and congested plantations require cleaning operation. If it is found fit for cleaning, following operations will be carried out.

1. All the multiple shoots will be reduced to one or two depending upon the type of plantation.
2. All the climbers will be cut in the plantation area.
3. All the unwanted bushes interfering with the growth of planted saplings will be removed (e.g. *lantana infestatiorls*)
4. Malformed, diseased and damaged individuals of the planted saplings will also be cut back.

II-6.4.3 THINNING: It is one of the tending operations required in plantations to improve the growth and form of trees. After few years of planting, saplings compete with each other for light, space and food. Unless proper conditions are provided, the saplings do not attain the optimum growth and form. To avoid any adverse impact on future crop, the number of saplings is reduced per unit area periodically as the

crop advances in age. The period between two successive felling is fixed depending upon the time required for canopy closure of the crop. Only the silvicultural thinning will be carried out and this will start only after the canopy differentiation has started. No mechanical thinning has been prescribed.

Thinning in Teak Plantations: The thinning in teak plantations will be done after 10, 20, 30 and 40^{th} year of plantation. A ten year cycle has been prescribed to prevent knot formation in the wood. The thinning will be done as per the yield table and it will be C grade silvicultural thinning. The site quality of the area will be determined from the average height of the dominant trees in the plantation area. The girth wise distribution of plants will be ascertained by laying the random sample plots of 0.50 ha area. Approximately 10% area will be taken for sample plots. The number of plants to be retained as per the age and site quality will be obtained from FRI Yield Table. The retention will also be regulated through basal area. The excess number of plants will be removed uniformly distributed in every girth class. The deficiency of plants in any girth class will be compensated with the surplus of the nearest girth class. The basal area of the stand marked for thinning will be obtained excluding the trees marked for thinning. This will be compared with the Yield Table value of basal area for that year. Any excess or deficiency of basal area will be rectified and marking will be completed for thinning .The marking must be checked by the RFO and Sub DFO before the thinning is carried out .A ten year thinning regime has been prescribed so as to procure a straight bole. The following rules for thinning will also be followed.

1. First the inferior individuals in the crop such as dead, poles will be marked for thinning. Then suppressed and dominated pole in the crop will be marked preferably. Some of the co-dominant trees/poles will also be removed depending upon the total number of trees to be removed in each girth class. But care will be taken that no permanent gap is created in the canopy.

2. The poles of coppice origin will be given priority over the poles of seed origin at the time of marking for removal.

3. The established coppice shoots will be reduced to one in case it requires retention.

4. The undesirable growth competing with teak plants will be removed at the time of thinning.

5. Non formation of epicormic branches in subsequent two to three years will be the index of a satisfactory thinning.

Thinning in Mixed Plantations: The mixed plantations consist of a variety of species. These species usually have different rate of growth and canopy coverage. The purpose of these plantations may also be different. It may for fuel wood, green cover, soil binding to prevent erosion, energy plantations . Therefore, it is very difficult to decide the norms for thinning in mixed plantations. If various species are raised in blocks, the thinning will be carried out in blocks only taking into consideration the nature of the species.

If these plantations require thinning, then a silvicultural thinning called 'Elite Thinning' will be carried out in these plantations. In this thinning, evenly spaced stems of elites are retained up to maturity. All the other species hindering with the growth of elites will be removed. The thinning in these plantations will be carried out after completion of 10, 20 and 30 years of formation. However a mid term thinning may be restored to in case there is a closure of canopy immediately after thinning. The following rules will be observed in this thinning.

1. The whole plantation area will be divided into grids of 0.50 ha. The elite plants will be selected in each grid and ringed with oil paint at the breast height. A suitable spacing of 4 to 5 meters will be maintained between two elites depending upon the model of plantation.
2. In the first thinning, all the other plants around the elite and competing with it will be removed. Any multiple shoots will be reduced to one.
3. In the second thinning also, the stems interfering with the growth of elites will be removed. If any elite gets damaged during first thinning, it will be replaced by other healthy pole in its surrounding.
4. In third thinning, a C grade thinning will be carried out in which the number of elites will be reduced approximately to $1/3^{rd}$ of the original number. Under no circumstances a permanent gap will be created.
5. In the successful and congested pure Glyricidia plantations, a small opening will be created in the radius of 2 metres at a distance of 10x10 metres and local shade tolerant species will be introduced in these gaps.

PART II

CHAPTER-VII

WORKING PLAN FOR MISCELLANEOUS WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-7.1.1 This Working Circle consists of forest areas which are not under any scientific management. The total area allotted to this working circle is 9917.235 ha. which is 12.15% of the total forest area of the Sub Division. Following categories of forest area have been allotted to this working circle. The statement showing areas allotted to miscellaneous W.C. are given in **Appendix - II. VII.1**

1, 2 Forest areas which have been diverted under section 2 of Forest Conservation Act 1980, for various developmental activities.

3,4,5 The forest area which is under encroachment, but its mutations entries have been made in the names of private people by the Revenue department and Eksali plot during the period by 1972 to 1978. However, records of Forest Department show that it is as forest area. A definite plan has to be made to remove illegal encroachment and plant the vacated area by planting suitable local species as per Government of India and Hon'ble Supreme Court Orders / Guidelines in the matter.

No regularization of existing encroachment should be done without following due procedure and prior permission of Government. The statement showing the details of the encroachment on the forest area is appended in the Appendix No. I.II.7 and I.II.8 Volume II. The detail of the forest area under various categories is given in the following tables.

Table No. – 1

Statement showing categories of forest area under Miscellaneous W.C.

Sr No.	Type of Forest Area	Area (ha.)
1	Area Transferred to Revenue Deptt	**6305.245**
2	Area diverted under F.C.Act	**87.665**
3	Area distributed by Revenue Deptt.,	**2139.410**
4	Eksali	**2139.414**
5	FRA (Forest Right Act 2006)	**786.0615**
	Grand Total	**9917.235**

Table No.- 2

Statement showing Range wise distribution of area under Miscellaneous W.C.

Sr No.	Range	Total area of range	Area allotted to W.C.	Percentage
1	Malegaon	33814.624	4335.502	**12.82%**
2	Satana	21253.564	3241.140	**15.25%**
3	Taharabad	26539.225	2340.593	**8.82%**
	Grand Total	**81607.413**	**9917.235**	**12.15%**

SECTION 2: GENERAL CHARACTERS OF VEGETATION

II-7.2.1 The area of category (1 and 2) has been diverted under FCA 1980 and is being used for various developmental activities. The area of category (3, 4 and5) 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 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 by convening regular meetings with the concerned revenue authorities.

SECTION 3: METHOD OF TREATMENT

II-7.3.1 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 diverted remains under that specified use, for what it was diverted. The area of category (3, 4 and 5) 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 S.D.F.O. Malegaon 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.

All the Unclassed Forest, Acquired CA areas and Acquired Private Forests should be notified as RF/PF in time-bound manner and be carried out at the earliest.

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PART II

CHAPTER-VIII

WORKING PLAN FOR WILD LIFE (OVERLAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-8.1.1 This working circle covers the entire area of the Sub division. It is an overlapping working circle. Therefore its recommendations will be in addition to the prescriptions of other working circles.

Wildlife management prescriptions provided below has been vetted and certified by the Chief Wildlife Warden and Principal Chief Conservator of Forests (Wildlife) M.S.Nagpur vide their letter No. Desk-22 (8)/WL/WP/CR.102(15-16) /5385, dated 10/2/2016 and the copy of the said certificate is enclosed at the end of this chapter.

For covering micro level details of management prescriptions, the office of the Chief Wildlife Warden and Principal Chief Conservator of Forests (Wildlife) M.S.Nagpur has issued directions vide their T/O No. Desk-22 (8)/CR.176/4072, dated 5/2/2015 to all territorial forest units to prepare special wild life micro plan in a given proforma for wild life management for five years or remaining period of working plan whichever is later. This working plan period is from 2015-16 to 2025-26. Hence, according to above mentioned directions Sub Divisional Forest Officer, Malegaon has to prepare a micro plan for this period and should get it sanctioned from the Chief Wildlife Warden through the office of the Conservator of Forests, Working Plan, Nashik.

The proforma for preparation of special wildlife management plan/ micro plan is enclosed at the end of this chapter.

SECTION 2: STATUS OF WILDLIFE IN DIVISION

II-8.2.4 STATISTICS OF WILD ANIMALS: The census of wild animals was conducted in this division in the year 2012. The Statement showing the estimation of major animals as per the census of 2012 is given in **Appendix -.II.VIII.1**

Table. No.-1

Statement showing the estimation of major animals as per the census of 2012.

Sr No.	Name of wild animal	No. of animal found
1	Panther	4
2	Hyena (Hyaena hyeana)	3
3	Peacock	15
4	Deer	7
5	Hare	5
6	Grey fox	3

SECTION 3: CONDITION OF HABITAT

II-8.3.1 The forests of this area belong to southern tropical dry deciduous, and southern tropical thorn forest categories. All these form a very good natural habitat for the diverse wild life 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 grasslands have been encroached upon which is causing a major threat to grass land birds particularly Great Indian Bustard.

SECTION 4: MAN- ANIMAL CONFLICT

II-8.4.1 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 panthers. 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.

Table No.-2

Statement showing the kill cases of domestic animals during 2009-10 to 2012-13.

Financial Year	No. of domestic animals killed	Compensation paid (Rs.)
2009-10	5	14363
2010-11	30	300950
2011-12	68	247660
2012-13	36	119650

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.

Table No.-3

Statement showing the human death and injury cases during 2009-10 to 2012-13.

Financial year	Total Cases	No. of Deaths	No. of injured	Compensation Paid (Rs.)
2009-10	0	0	0	0
2010-11	0	0	0	0
2011-12	1	0	1	6185
2012-13	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 **(Appendix –II.VIII.2),** WLP-1002/PK 258/F-1 dt. 20-05-2003 **(Appendix –II.VIII.3),** and WLP-1008/PK 270/F-1 dt. 02/07/2010 **(Appendix –II.VIII.4),** 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, Indian Gaur, Wild pig, Wolf . Such compensation would be admissible to the successor. 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 the working plan of Malegaon Sub Division.

SECTION 5: WILD LIFE OFFENCE CASES

II-8.5.1 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 Malegaon Sub Division 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.

Table No.- 4

Statement showing the details of accidental deaths of wild animals during last five years

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Name of animal	2009-10	2010-11	2011-12	2012-13	Total deaths
Deer (Male)	-	-	3	2	5
Dear (Female)	-	-	2	2	4
Hyaena	1	-	1	-	2
Leopard (Male)	-	-	-	-	-
Leopard (Female)	-	-	1	2	3
Monkey (Male)	-	3	1	-	4
Peacock Female	-	-	-	5	5
Bonnet macaque (Male)	-	-	-	1	1
Wolf	-	-	-	1	1

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

II-8.7.1 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 effective protection, it is very essential that all these rare and endangered animals and plants should be brought on record with their locations. 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 sub divisional office. A scheme for conservation and protection of these areas shall be prepared and their status will be monitored regularly.

II-8.7.2 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 sub 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 forest

ponds 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. The 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.

II-8.7.3 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.

II-8.7.4 MANAGEMENT OF GRASSLANDS: There are many grass lands in this division particularly in Malegaon range. These grass lands are the potential habitat of numerous grass land birds such as stone curlews, Indian courser, larks, babblers, munias, falcons, partridges, quails . But these grasslands are inflicted with the problem of illegal grazing, burning and encroachments. 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.

II-8.7.5 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, Rufous 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

Table No.5

Statement showing the details information regarding breeding seasons of the grassland birds.

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

II-8.7.6 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.

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Guidelines for preparation of Management Plan for Wildlife Habitat Outside Protection Areas.

Following things are important and should be considered while preparation of Management Plan (5 years period) for Wildlife habitat outside PAs

1.Macro level delineation of wildlife habitat area in the division should be carried out

2. Macro level ground truthing using transect for spatial presence/abundance of flora and fauna.

3. Profiling of micro water sheds. (if relevant).

4. Taking note of natural water courses, unique topographical features.

5. Identify the degraded forest areas where habitat restoration/improvement works are required.

6. Suggest measures to be taken during coming 5 years/remaining plan period. Quantify the works to be taken and provide budgetary provisions for it. (phase out the work on yearly basis) The Management plan for Wildlife habitat outside protected areas should consist of following chapters

Part-A The Existing situation

Chapter 1 : Introduction of the Area

1.1 Brief Description of the area and significance for wildlife conservation.

1.2 Natural habitat

1.3 Planted habitat (from plantations, shelter belts etc.)

1.4 Disturbances in habitat (railway lines, cleared transmission line, roads etc.)

1.5 Stepping stones (suitable habitat patches compartment wise should be mentioned here)

1.6 Map showing landscape including degraded/fragmented wildlife habitat in the forest division

1.7 Major land use classification in the area

1.7.1 Reserve forest/Proposed Reserve Forest/Unclassified State Forests.(Division/Range/Blocks/Beats)

1.7.2 Villages/Towns/Cities (Districts, Sub Divisions, Blocks, Panchayats)

1.7.3 Quality of habitat

1.8 Past Wildlife Management (List of works executed, physical quantum, expenditure incurred, year of execution, scheme under which work undertaken)

1.9 Vegetation Types

1.10 Wild fauna and habitats

Chapter 2: Status of wild animals

2.1 Distribution and abundance of wild animals. (Compartment/Beat/Range wise)

2.2 Prey-predators relationships.(density of herbivores beat wise as per 2010/2014 Country level assessment and number of prey species.

2.3 Assessment of threats.

Chapter 3: Land use patterns and conservation Management Issues

3.1 Socio-economic profile of villages and resources dependency and human-wildlife mutual impacts.

Chapter 4: Visions, Goals, Objectives and Problems

4.1 Vision

4.2 Management

4.3 Management objectives

4.4 Problems in Achieving Objectives

4.5 Strengths-weakness –opportunities-limitations (SWOT) Analysis.

Chapter 5: Management strategies.

5.1 Delineation of Wild life habitat

5.2 Wildlife Management in territorial forest areas overview (identification and inclusion of prescriptions in the working plans of respective divisions)

5.3 Zone Plan Management Strategies (Protection, habitat management and habitat restoration , management of man animal conflict) which should be area specific and mainly should be proposed as per abundance of wildlife in the area.

Chapter 7: Wild animal Population and habitat Assessment.

7.1 Day to day monitoring.(Protocol should be designed)

7.2 Estimation of wild animal population (Phase-1,Waterhole count etc. should be prescribed, phase-IV in tiger bearing area should be proposed)

Chapter 8 : Organization, Administration and Budget.

8.1 Staff Deployment and protection strategy (here special anti poaching squad to be deployed should be planned, protection hut if necessary should be proposed)

8.2 Schedule of Operations (as prescribed in 5.3 above should be phased out year wise)

8.3 Activity Budget

Appendix:

i) List of Maps

ii) List of Appendices

Certificate of the Wildlife Warden, M.S. Nagpur

No. Desk-22(8)/WL/WP/CR-102(15-16)/5385/2015-16
Nagpur 440 001 Dated :- 10 February, 2016

Certificate

This is to certify that the Wildlife Management Prescriptions provided in chapter-VIII Part-II of Working Plan of Malegaon Forest Sub-division written by Dr. V. Clement Ben for the period from 2014-15 to 2023-24 is vetted by this office. The general prescriptions mentioned are in tune with principles of Wildlife Management.

For covering micro level details of management prescriptions this office has issued directions vide T/O No. Desk-22(8)/CR.176/4072, dated 5/2/2015 to all territorial forest units to prepare special wildlife micro plan in given proforma for wildlife management for five years or remaining period of Working Plan whichever is later. This plan will be prepared by concerned Deputy Conservator of Forests/Divisional Forest Officer/Sub-Divisional Forest Officer of that division/Sub-division and obtain sanction from the Chief Wildlife Warden.

The above directions should be reproduced in the Section-II-8.1.1 of the Working Plan.

Chief Wildlife Warden &
Principal Chief Conservator of Forests (Wildlife)
Maharashtra State

PART II

CHAPTER- IX

WORKING PLAN FOR JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

SECTION 1: INTRODUCTION.

II-9.1.1 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, . 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, . 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 . 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

II-9.2.1 This is an overlapping working circle and extends to the whole area of the sub sub-division. There are three ranges in this sub sub-division. The forest protection committees have been formed in all the ranges and the scheme is being implemented under various programmes.

1. The different topics of each subcommittee of J.F.M. is given in **Appendix –II.IX.1**
2. The latest policy instructions in G.R. No.MSC / 2000 /CR143 / F-2 Mumbai dt.25.04.2003. is given in **Appendix –II.IX.2**
3. The letter written by The chief Secretary of Maharashtra state regarding J.F.M.dated 21.6.2004 is given in **Appendix –II.IX.3**
4. GR.No.FDM 2011/Pra.Kra 100/ F-2 Mumbai dated 5.10.2011 regarding strengthening of JFM is given in **Appendix –II.IX.4**
5. The Rules regarding regulation of assignment, management and cancellation of village forests GR.No. 2010/CR 189/F-9 Mumbai dt.20 May 2014. is given in **Appendix –II.IX.5**

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 SUB-DIVISION

II-9.4.1 The participatory forest management was started in the sub-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 sub-division since then. The range wise detail of the villages covered under the scheme is given below.

Table No.-1

Statement showing the details of 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	Malegaon	75	55	55	55	00	**465.00**
2	Satana	53	49	55	55	00	**535.00**
3	Taharabad	61	52	49	49	00	**352.05**
Total		**189**	**156**	**159**	**159**	**00**	**1352.05**

There are 189 villages in the Malegaon sub sub-division having forest area. Out of this, the 'Forest Protection Committees' have been formed in 159 villages. Approximately 84 percent villages have been covered under participatory management of forest. In all these villages, total 1352.05 hectares of plantation have been taken.

II-9.4.2 Evaluation of Scheme: The joint forest management scheme has satisfactory results in the sub-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.

Table No.-2

Statement showing the detail of Circle Level Evaluation of villages under Participatory Forest Management.

Total FPCs in sub Division	Classification of Forest Protection Committees		
	Good Committees	Good Committees	Fit for cancellation of registration
Malegaon 55	26	24	**0**
Satana 49	20	29	**0**
Taharabad 52	28	24	**0**
Total 156	**74**	**82**	**0**

II-9.4.3 Sant Tukaram Vangram Yojna: Every year, the villages are evaluated under Sant Tukaram Vangram Yojna in the sub-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 sub-division have got award at district and state level which shows that the scheme is performing well in the sub-division. The details of the villages that got recognition at district and state level is given below.

Table No.- 3

Statement showing the detail performance of villages under Sant Tukaram Vangram Yojna.

Sr No.	Year	Range	Village	Awar and level		Amount
1	2006-07	Malegaon	Chichave	Dist.	1st	**51000**
2	2011-12	Satana	Dahindule	Dist.	II nd	**31000**
3	2012-13	Satana	Phofir	Dist.	III rd	11000

II-9.4.4 Survival Percentage of JFM and FDA Plantations: Malegaon Sub Sub-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.

Table No.- 4

Statement showing the Survival Percentages of various plantations taken under JFM and FDA.

Sr No	Name of Scheme	Range	Year of Plantation	Area of Plantation (ha.)	Survival percentage
1	JFM (State)	Malegaon	2006-07	30 .00	**76.96**
2	JFM (State)	Malegaon	2006-07	30.00	**91.09**
3	JFM (State)	Malegaon	2010-11	30.00	**95.00**
4	JFM (State)	Malegaon	2011-12	30.00	**75.00**
5	JFM (State)	Taharabad	2008-09	30.00	**32.00**
6	JFM (State)	Taharabad	2008-09	25.00	**22.00**
7	JFM (State)	Taharabad	2008-09	18.00	**20.00**
8	JFM (State)	Taharabad	2008-09	46.00	**12.00**
9	JFM (State)	Taharabad	2008-09	50.00	**15.00**
10	JFM (State)	Taharabad	2010-11	32.050	**47.00**
11	JFM (State)	Taharabad	2011-12	30.00	**52.00**
12	JFM (State)	Satana	2008-09	30.00	**65.10**
13	JFM (State)	Satana	2009-10	30.00	**59.83**
14	JFM (State)	Satana	2010-11	30.00	**58.70**
15	JFM (State)	Satana	2011-12	30.00	**54.88**
16	JFM(District)	Satana	2007-08	30.00	**48.40**
17	JFM (District)	Satana	2007-08	40.00	**45.00**
18	JFM (District)	Satana	2007-08	30.00	**47.10**
19	JFM (District)	Satana	2007-08	30.00	**55.00**
20	**JFM (District)**	**Satana**	**2007-08**	**30.00**	**40.35**

SECTION 5: METHOD OF TREATMENT

II-9.5.1 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.

II-9.5.2 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, and education committee, alternative sources of fuel committee . 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.

II-9.5.3 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 . 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 components 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. **Appendix II. IX.**

5.II-9.5.4 Implementation

The scheme shall be implemented strictly as per the planning. Regular meetings will be conducted in the village by forester and forest 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. Sub Divisional Forest Officer 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 Sub Divisional Forest Officer. Elected representatives of the district and officers from other departments should be invited to the village to boost their morale.

II-9.5.5 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 . The group can also be utilized for plantation weeding and other related activities .

II-9.5.6 Monitoring and Evaluation:

Monitoring of the scheme is very essential to keep a check that it is preceding 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.

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CHAPTER-X

WORKING PLAN FOR FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-10.1.1. This working circle extends to entire Sub divisional area comprising of reserved 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

II-10.3.1 Presently, the forest is inflicted with illicit felling, unauthorized grazing, encroachments, forest fires . These maladies are playing havoc with the forest crop. The intensity of these problems along with the number of offence cases booked is given in **Appendix I. II. 4**

II-10.3.2 Illicit Felling

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.

Table No. – 1

Statement showing the detail of illicit felling and loss due to illicit felling during 2008-09 to 2012-13.

Year	No. of trees illicitly felled		Loss due to illicit felling (Rs.)		
	Teak	**Non-Teak**	**Teak**	**Non-Teak**	
2008-09	180	175	125000/-	8000/-	133000/-
2009-10	23	31	66680/-	3928/-	70608/-
2010-11	11	31	9029/-	7671/-	16700/-
2011-12	33	46	56081/-	7715/-	63796/-
2012-13	38	182	241623/-	39166/-	280789/-

II-10.3.3 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)

Similarly, the whole area of the Sub-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 . 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.

Table No. – 2

Statement showing the number of the offence cases (Type wise) during 2002-03 to 2012-13.

Sr. No	Year of Offence	Type of Offence		
		Grazing	Encroachment	Forest Fires
1	2002-03	73	52	16
2	2003-04	75	49	19
3	2004-05	66	28	11
45	2005-06	47	13	27
6	2006-07	57	12	10
7	2007-08	32	06	22
8	2008-09	15	69	08
9	2009-10	21	37	05
10	2010-11	16	11	27
11	2011-12	08	03	17
12	2012-13	12	20	15

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. The forest area of Malegaon Sub Divison Division falls in two talukas. The detail of claims finalized by district committee is given below.

Table No. – 3

Statement showing the summary of encroachment cases under FRA.

Sr. No.	Taluka	No. of claims approved by district committee	Forest area approved by district committee (ha)
1	Malegaon	131	188.070
2	Satana	735	541.480
	Total	**866**	**729.550**

SECTION 4: METHOD OF TREATMENT

II-10.4.1 The forest protection in the Sub-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 . 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 Sub-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 Sub-Division 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, State Reserve Police unit which is attached to the Sub-Division fights the cause to a greater extent. Frequent combing operations of the State Reserve Police unit along with the field staff can ensure protection of the sensitive forest areas.

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.

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 ACF. 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(T), 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 Sub-Divisional Forest Officer, Malegaon Sub Division 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 Sub-Divisional Forest Officer, within 15 days of the incidence of the fire.

Sub-Divisional Forest Officer, Malegaon Sub Division 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.

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PART II

CHAPTER-XI

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

SECTION 1: GENERAL CONSTITUTION

II-11.1.1 This is an overlapping working circle and covers entire area of the sub division. Some of forest areas in the sub 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. Abstract of amendment in respect of ownership of NTFP in notified areas is given in **Appendix – II.XI.1.** SDFO, Malegaon Sub 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 sub divisional level during the last five years.

SECTION 2: IMPORTANT NTFP SPECIES

II-11.2.1 The enumeration of NTFP species has been carried out by SOFR unit Nashik in the year 2012-13. The prominent NTFP species along with their occurrence per hectare in order of preponderance is given below

Table no.-1

Statement showing the prominent NTFP species along with their occurrence per Ha. In order of preponderance.

Sr.No.	Species Name	User Part of the Plant
1	Amba	**Fruits**
2	Apta	**Leaves**
3	Behda	**Fruits**
4	Bor	**Lac host, Fruits**
5	Butya Palas	**Lac host, Flowers**
6	Chinch	**Fruits**
7	Hirda	**Fruits**
8	Jambhul	**Fruits**
9	Moha	**Flowers & Fruits, Seeds**
10	Neem	**Seeds, leaves**
11	Palas	**Lac host, Flowers**
12	Shiras	**Lac host.**
13	**Tendu**	**Leaves**

SECTION 3 : SPECIAL OBJECTS OF MANAGEMENT

II-11.3.1

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 4: METHOD OF TREATMENT:

II-11.4.1 -Resource Inventory

It is very important to know the inventory of NTFPs in the sub 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.

II-11.4.2- 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 are 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 No.-2
Statement showing the plants species used in different Ayurvedic Formulation as per FRLHT.

Sr. No	Plant Name	Latin Name	Local Name	Endangered Species/ 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 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.

II-XI.4.3 -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 . 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 No.- 3

Statement showing the name of species found in Nashik and are highly traded in India (As per FRLHT)

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 Del	Babul	200-500	150-250
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

II-XI.4.4- 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.

Botanical names of trees
Acorus calamus L
Anamirta cocculus (L) WIGHT & ARN.
Brassica nigara (L) KOCH.
Capsicum annuum L
Datura metel L.
Rauvolfia serpentina (L) BENTH.EX KURZ
Santalum album L
Sesamum indicum L.

Promotion of Medicinal Plant in Malegaon Sub 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) .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.

Table No. – 4

Statement showing the sites of plantations under Dasmul Project.

Sr |No	Range	Name of sites	Area (ha.)	Year	Survival percentage
1	Malegaon	Chinchave	20	2009-10	**51%**
2		Karanjgavan	25	2009-10	**25%**
3		Nimbayati	25	2010-11	**25%**
	Total		**70**		

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 to conserve the rare plants. In addition to this, the regular plantations schemes should include at least 20 percent of NTFP species.

II-XI.4.5 <u>Promotion of Medicinal Plants</u>

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-IV.3.** 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-IV.3.** Malegaon Sub

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.

II-XI.4.6- 6.Harvesting

Harvesting of NTFPs through JFM Committees needs to be done very carefully and in a systematic manner. The method of harvesting needs to 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 .XI. 2.**

II-XI.4.7 - 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.

II-XI.4.8- Marketing of Products

JFM committees need to be trained and encouraged to make the local people aware regarding marketing facilities.

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PART II CHAPTER-XII

WORKING PLAN FOR BAMBOO (OVERLAPPING) WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION

II-12.1.1 This is an overlapping working circle containing compartments having harvestable bamboos. Bamboo clumps are mainly available in Satana and Taharabad 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. The total area included in this working circle is 1228.879 .ha. The range wise distribution of bamboo area is given below.

Table No.-1

Statement showing the details of Compartment allotted to Bamboo Overlapping W.C.

Sr.No.	Range	Area(ha)	Compartment and survey numbers
1	Satana	826.293	**228,229**
2	Taharabad	402.583	**145**
TOTAL		**1228.876**	

The detail statement showing the compartments allotted to Bamboo overlapping working circle is given in **Appendix – II.XII.1**

SECTION 2: GENERAL CHARACTERS OF VEGETATION

II-12.2.1 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. These are in hacked, malformed and congested condition. Good natural regeneration of Kashti bamboo has taken place at many places, but it is congested and has a twisty growth, requiring an immediate silvicultural intervention.

SECTION 3: SPECIAL OBJECTS OF MANAGEMENT

II-12.3.1 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

II-12.4.1 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 may have become congested and deformed. Therefore, in the first phase, bamboo crop will be cleaned 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 year-wise schedule of cleaning operations is given in the **Appendix II.XII-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.XII-1.** The statement showing the details of felling series and sequence of working in Bamboo overlapping W.C. is given in **Appendix –II.XII.2** The prescription of working of the bamboo clump is as below

.

Spare the working of clump until 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, the clumps can be harvested 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 Sub Divisional Forest Officer 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 15^{th} June to 30^{th} 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 Brads 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.

II-12.4.2 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 these 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 foci 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.

II-12.4.3 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.

II-12.4.4 Artificial Regeneration:

In Improvement Working Circle, bamboo will be planted at suitable sites having good soil .

II-12.4.5 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.

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PART II

CHAPTER-XIII

MISCELLANEOUS REGULATIONS

SECTION 1: DEMARCATION AND MARKING TECHNIQUE

The demarcation of annual coupes will be done one year in advance.

II-13.1.1. 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.

II-13.1.2 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.

II-13.1.3 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 .

II-13.1.4. 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

II-13.1.5. 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: HARVESTING

II-13.2.1. 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 SDFO by the RFO. SDFO will compile this information and fix the number of trees to be removed by mid-November. After permission of SDFO 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 Sub D.F.O. Malegaon
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 SDFO 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 . 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. As per the provisions of Maharashtra Forest Manual Volume .I page No. 110 Rule No.23.07.03 i.e. Timber and other forest Produce used for department works viz. building, bridges, roads, boundary lines etc. should be maintained in each range office and in each independent sales depot in charge of Range Forest

Officer. A copy of the form should be submitted monthly by each RFO in charge of range or an independent sale depot to the Dy. C.F.

The full value at scheduled rates of timber or other produce used in departmental constructions should be debited to the work concerned. When a government provides sawn material for such works, the full value of the material including cost of sawing must be credited to the concerned saw mill.

The felling 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 Malegaon Sub Division and it shall also include its disbranching.

8. High stumps of illicit cut trees from any part of the forest can be removed by the permission of SDFO, Malegaon Sub Division 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 than 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 Sub D.F.O. Malegaon

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 Sub D.F.O. Malegaon.

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

II-13.3.1 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.

II-13.3.2 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.

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. The format for submission of deviation proposals is given in the **Appendix II. XIII. 1**

II-13.3.3. Procedure for Obtaining Sanction of Deviation:

1. For deviations of type ‘A’ above, the territorial SDFO 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 SDFO will submit the deviation proposal to Chief Conservator of Forests (Territorial) through Conservator of Forests, Working Plan, Nashik. The 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

II-13.4.1 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 PCCF, 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

II-13.5.1 The detail of forest buildings is given in **Appendix II.XIII. 3**

Research Plots: There is no research plot in the forest area of this Sub Division.

SECTION 6: ECOTOURISM

II-13.6.1 The Sub 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". Eco tourism shall/may 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-tourisms sites will be managed by the forest department as per the guidelines of the Government. The detail of sites being developed under eco-tourism is given in the **Appendix- II .XIII.4 .**

SECTION 7 : OBSERVATIONS IN EVALUATION REPORTS OF PLANTATION ACTIVITIES.

II-13.7.1 The evaluation of all the plantation activities are carried out by Sub 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 Malegaon Sub Sub 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* . have survived with good growth.In the areas with inferior soil *Neem, Chich,babul* should be preferred for plantation instead of *Subabhul* and *Gliricidea.*

It is suggested that SDFO 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 preferred. While planting, species corresponding to the particular soil should only be planted. The nursery stock should be raised in consultation with SDFO by RFO (territorial).

SECTION: 8 FIELD TOURING BY SENIOR OFFICERS OF THE SUB DIVISION

II-13.8.1 It has been observed that during last few decades' serious damage has been caused to the rich forests of the Sub Division In order to prevent the incidences of illicit cutting and fire, senior officers of the Sub Division viz. SDFO should extensively and regularly tour the remote and vulnerable forest and carry out other field inspection. It has been observed that senior officers of the Sub 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. Inspections and touring by senior Forest Officers should be carried out as per Govt. G.R. No. TRS 04/2014/C.No.72/F-6 Mumbai Dtd.13/08/2014 **Appendix No. II.XIII.5**

It is recommended that SDFO need to 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 Sub 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 Sub 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

II-13..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 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

II-13.10.1 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. Conservator of Forests , Working Plan Nashik :

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. Sub Divisional Forest Officer " Malegaon Sub 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 :

II-13.11.1 The forests of Malegaon Forest Sub 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 –

II-13.11.2 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 SDFO immediately on wireless and in writing giving the details of area burnt and the various types of losses occurred to the forest crop.

II-13.11.3 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.

II-13.11.4 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.

II-13.11.5 <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 SDFO 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.

II-13.11.6 <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.

II-13.11.7 <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.

II-13.11.8 <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.

II-13.11.9 (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 Assistant 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 Assistant 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.

II-13.11.10 Provisions contained in the Maharashtra Forest Manual Vol.- II part - VI – 6.03- Fire offences and Fire Protections

(AO:09):- As per this rule the forest fire offences should not as rule be compounded.

(AO:10):- The duties of the Magistrates when trying offenders in forest fire cases.

(AO:14):- It provides for the continuous protection of the valuable forests from fires.

(AO:15):- 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 for bad fires in exceptional cases.

(AO:16):- It deals with the duties of the village offences with regard to fire protection.

(AO:17):- It deals with the powers of the forest officers to sanction rewards in cases of effective fire protection

II-13.11.11 <u>(B) Provisions for fire protection contained in the wildlife (Protection) Act.1972 :-</u>

(viii) **Section 17 (i) (e)** – Under this section setting fire to any vegetation for hunting purposes is prohibited.

(ix) **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.

(x) **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.

(xi) **Section 32 -** Use of explosive in a sanctuary by any person so as to cause injury or endanger any wildlife in sanctuary.

(xii) **Section 35 (8) -** Provision of section 27(2) (d) and (e), 30 and 32 apply in case of a National park also.

II-13.11.12 (B) <u>Provisions contained under "The Maharashtra Minor Forest Produce (Regulation of Trade), 1969 :-</u>

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 Assistant Conservator of Forests and his decision shall, subject to an appeal to the Conservator of Forests, be final, conclusive and binding on the Agent.

II-13.11.13 (B) <u>Provisions contained in "The Maharashtra Felling of trees (Regulation) Act, 1964 :-</u>

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.

II-13.11.14 (G) <u>Protection of bamboo areas from fire after flowering</u>

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 SDFO.

The SDFO will be held personally responsible for carrying out efficiently all protective and prohibitive in the areas under his control in his Sub Division.

The SDFO must satisfy himself that the exterior fire lines and other fire lines as mentioned in the foregoing pares have been properly cleared and burnt thoroughly before the end of February. He must by continuous inspecting enquire about the implementation of the various prohibitory orders and assure that Sufficient protective staff is available to implement these orders. The SDFO 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 SDFO should stay at least twenty days in their jurisdiction to prevent fire. Vehicle of SDFO. 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.

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PART II

CHAPTER –XIV

FINANCIAL FORECAST AND COST OF THE PLAN

SECTION 1: FINANCIAL FORECAST

II.14.1.1 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 2018-19 as the mid year of the plan. On above basis calculations for revenue and expenditure have been made

II.14.1.2 REVENUE : The revenue for the year 2012-13 is 220058/- the corresponding figure for the year 2013-14 comes to be Rs.242064 /- . An additional revenue is expected from yield of 25 m^3 timber and 50 m^3 of firewood. The average rates for teak and miscellaneous species are Rs.341591/- and Rs.28689/- for the year 2013-14. The rate for firewood has been taken as Rs.21890/- per m^3. The additional revenue which is expected to come is Rs. 7763305/- The total estimated average revenue for the year 2013-14 is Rs.8005369/-. The projected figure of revenue for the year 2018-19 comes to Rs.12892723/-. This will be the estimated average annual revenue for the entire plan period.

II.14.1.3 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 2018-19 in the tables taken together is Rs. 479597000/- (Rs.457377000/- + Rs.376000/- + Rs.21844000/-), which is the average annual expenditure for the plan period. Annual establishment cost comes to be Rs.111436000 /- (total non-plan expenditure for the year 2018-19 excluding wages.)

SECTION 2: FUTURE EXPENDITURE

II.14.2.1 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

II.14.3.1 The total expenditure incurred on the preparation of this plan is Rs.192.15/-lakh. The cost of this plan works out to be Rs.235/- per hectare.

PART II CHAPTER-XIV
FINANCIAL FORECAST AND COST OF THE PLAN
Table 1

EXPENDITURE ON DEVELOPMENT ACTIVITIES

Wage rate Rs. 60:40 for (2014-15)

DETAILS OF REGENERATION/DEVELOPMENT OPERATIONS AND EXPENDITURE ON THEM (RS.IN THOUSAND)												
Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
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 = 1453.78 ha.	Oct. to Dec	317	349	384	422	464	511	562	618	680	747
2	Gully plugging & nalla bunding using locally available material (3.5 MD/ha Area= 1453.78ha.	Oct. to March	0	1234	1357	1493	1642	1807	1987	2186	2405	2645
3	Cement nalla bunds of approved designed Area = 1453.78ha. @ 9 MDs / Ha. +M.S Rs.283 / ha.	Oct. to March	0	3585	3944	4338	4772	5249	5774	6351	6986	7685
4	Digging of contour trenches of size (2 x 0.60 x 0.30) , 100 running meter per hectare 50 % of 1453.78 ha. = 726.89 Ha 12 MDs per Ha.	Oct. to March	0	2116	2328	2560	2816	3098	3408	3749	4123	4536
5	Collection of Seed of local forest species and sowing by local staff (0.5 MD/ha. Area=50 % 1453.78 ha = 726.89 ha.	0	0	88	97	106	117	129	142	156	171	189
6	Fire tracing (7 M.D./Km , for 13.97 km.	Dec. to Feb	24	26	29	32	35	39	43	47	51	57

Sr No	Activities/ Operations and Their Norms			Period of working	YEARS									
					2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
7	Tending operations of rooted stock area / cleaning and stump dressing 50 % of total area 1453.78 ha. = 726.89 Ha. 10 MD/ Ha			Oct. to March	0	1763	1939	2133	2347	2581	2839	3123	3436	3779
8	Stump Plantation 5 % area OF 1453.78 ha. =72.69				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	Oct. to Dec.	16	18	19	21	23	26	28	31	34	38
	PPO	24.57	15.71	Oct. to March	0	434	477	525	578	635	699	769	846	930
	FYO	218.89	8124.72	Apr. to Nov.	0	0	4450	4895	5385	5923	6515	7167	7883	8672
	SYO	167.20	1900.2	Jul. to Oct.	0	0	0	3086	3395	3734	4107	4518	4970	5467
	TYO	37.00	0	Jul. to Oct .	0	0	0	0	652	717	789	868	955	1050
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006													
	Total of Protection W.C.				**357**	**9613**	**15024**	**19612**	**22226**	**24448**	**26893**	**29582**	**32541**	**35795**

Sr No	Activities/ Operations and Their Norms			Period of working	YEARS									
					2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Working Circle : Improvement														
1	Fire tracing - For Forest Area10.53 Kms/ha 7 M.D./Km			Dec. to Feb.	18	20	22	24	26	29	32	35	39	42
2	Preparation of Treatment Map, 0.90 MD/ha Area = 495.39 ha.			Oct. to Dec.	108	119	131	144	158	174	191	210	232	255
3	(A)Area Category "A" 5 % of total area 24.77 ha I) Stump Dressing & cleaning 10 MD/ha.			Oct. to March	0	60	66	73	80	88	97	106	117	129
	ii) Gully plugging & Nalla bunding locally available material 3.5 MD/ha.			Oct. to March	0	21	23	25	28	31	34	37	41	45
	iii) Sowing & Dibbling of seed 0.5 MD/ha.			Apr. to June	0	3	3	4	4	4	5	5	6	6
	iv) Bamboo Planting 2 % of total area 0.5 ha.				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
	PPO	116.00	400	Oct. to Mar.	0	14	15	17	19	20	23	25	27	30
	FYO	83.00	2749	Apr. to Nov	0	0	11	12	13	15	16	18	19	21
	SYO	57.00	900	Jul to Oct	0	0	0	15	17	18	20	22	24	27
	TYO	45.00	500	Jul to Oct	0	0	0	0	6	7	7	8	9	10
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006													

Sr No	Activities/ Operations and Their Norms			Period of working	YEARS									
					2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
	(B) Area Category "B" 45 % of total area 495.39 ha= 222.93 ha I) Cleaning & Stump dressing 10 MD/ha.			Oct. to March	0	541	595	655	720	792	871	958	1054	1160
	ii) Teak Plantation 10 % of 222.93 ha.= 22.29 ha.													
	Items	M.D./ha	M & S/ha.											
	PPO	24.57	15.71	Oct. to Mar	0	133	146	161	177	195	214	236	259	285
	FYO	218.89	8124.72	Apr to Nov	0	0	1364	1500	1650	1815	1997	2197	2416	2658
	SYO	167.20	1900.31	Jul to Oct	0	0	0	946	1041	1145	1259	1385	1524	1676
	TYO	37.00	--	Jul to Oct	0	0	0	0	200	220	242	266	293	322
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK -82/Jal-12 Dtd 13.7.2006													
	(C) Area Category "c"&"D" 50 % of total area 495.39ha= 247.70ha I) Stump dressing &Cleaning 10 MD/ha.			Oct. to March	0	601	661	727	800	880	968	1065	1171	1288
	Total of Improvement W.C.				**126**	**1512**	**3038**	**4303**	**4939**	**5433**	**5976**	**6574**	**7231**	**7954**

Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Working Circle : Fodder Management												
1	Preparation of Treatment Map, 0.90 MD/ha Area = 365.31ha.	Oct. to Dec	80	88	97	106	117	129	142	156	171	0
2	TCM ,New : Repair, 20:80 @ 40mt/ha or @ 30MD/ha for new and @ 10 MD/ha for Repair Annual Area=365.31ha	Oct. to March	0	1240	1364	1500	1650	1815	1997	2197	2416	2658
3	Fire tracing work annual @.0.54 M.D./ha. Area = 3287.826 ha.	Oct. to March	431	474	522	574	631	694	764	840	924	1016
4	Type A 5% of 365.31ha =18.27ha.		0	0	0	0	0	0	0	0	0	0
	i) Gully plugging & Nalla bunding 3.5 MD/ha.	Oct. to March	0	16	18	19	21	23	26	28	31	34
	ii) Preparation of WATs for 18.27 ha 0.60 X 0.30 X 1 M @ 100Rmt/ ha12MD/ha	Oct. to March	0	53	58	64	71	78	85	94	103	114
	iii) Collection of seed and sowing by staff 0.5 MD/ha.	Jan. to June	0	2.0	2	2	3	3	3	4	4	4
	iv)Agave Planting on TCM Nursery cost & planting with transportation of 300 Agave/ha for18.27ha @ 2.4 MD/ha	Oct. to June	11	12	13	15	16	18	19	21	24	26
5	Type B 85% of total area 365.31 ha. =310.51ha.		0	0	0	0	0	0	0	0	0	0
	i) Gully plugging & Nalla bunding 3.5 MD/ha.	Oct. to March	0	264	290	319	351	387	425	468	514	566

Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
6	i) Sloppy area 15% of 310.51ha=46.58ha.		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	Dec. to July	0	1017	1119	1231	1354	1489	1638	1802	1982	2180
	ii)plain area 70 % of 310.51ha = 217.36 ha.		0	0	0	0	0	0	0	0	0	0
	a) Digging of CCT 500 Rmts/ ha. Or 45MD/ha.	Dec. to July	0	2372	2609	2870	3157	3473	3820	4202	4622	5085
	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	Dec. to July	0	880	968	1065	1171	1288	1417	1559	1715	1886
	1.Nursery cost for Tussocks Rs.230/1000 Including planting of tussocks 6 M.D. / 4166 महाराष्ट्र वानिकी प्रकल्प ग्दूड्डङ्घ ग्दू.४	Oct. to June	749	824	906	997	1097	1206	1327	1460	1606	1766
7	Type C = 5 % 365.31Ha. = 18.27 Ha. Thinning / Cleanning10 M.D. per Ha.		0	44	48	53	59	64	71	78	86	94
8	Type D 5% of 365.31 Ha. = 18.27 Ha Cleaning 10 M.D. / Ha.		0	44	48	53	59	64	71	78	86	94
	Total of Fodder Management working circle		**1271**	**7330**	**8063**	**8869**	**9756**	**10732**	**11805**	**12986**	**14284**	**15524**

Sr No	Activities/ Operations and Their Norms			Period of working	YEARS									
					2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Working Circle :Afforestation Working Circle														
1	Fire tracing - For Forest Area 194.72 Kms @. 7 M.D./Km			Dec. to Feb.	331	364	401	441	485	533	586	645	710	780
2	Preparation of Treatment Map, 0.90 MD/ha Area = 2333.52ha.			Oct. to Dec.	509	560	616	677	745	820	902	992	1091	1200
3	Afforstation Area Type A 5 % of 2333.52ha.= 116.68ha.				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.			Oct. to March	0	99	109	120	132	145	159	175	193	212
5	ii) Collection of seeds of local species & sowing by staff 0.5 MD/ha.			Jan. to June	14	15	17	19	20	23	25	27	30	33
6	Type B 94 % of 2333.52ha = 2193.50 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	479	527	580	638	701	771	849	933	1027	1129
	PPO	275.5		Oct. to March	0	146569	161226	177348	195083	214592	236051	259656	285622	314184
	FYO	246.7		Apr to Nov	0	0	131247	144372	158809	174690	192159	211375	232512	255763
	SYO	77.96		Jul to Oct	0	0	0	41476	45624	50186	55205	60725	66798	73477

Sr No	Activities/ Operations and Their Norms			Period of working	YEARS									
					2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
	TYO	26.32		Jul to Oct	0	0	0	0	14003	15403	16944	18638	20502	22552
	IV th year	15.6		Nov to March	0	0	0	0	0	8299	9129	10042	11046	12151
	Vth year	15.6		Nov to March	0	0	0	0	0	0	8299	9129	10042	FALSE
	ii) Gully plugging & Nalla bunding 3.5 MD/ha.			Oct to Dec	0	1862	2048	2253	2478	2726	2999	3299	3629	3991
	Type C 0.5 % of 2333.52 ha = 11.67 ha area Cleaning= 10 MD/ha			Oct. to March	0	28	31	34	37	41	45	50	55	60
	Type D % of 2333.52ha = 11.67 ha area Cleaning= 10 MD/ha			Oct. to March	0	28	31	34	37	41	45	50	55	60
	Total of Afforestation working circle				**1333**	**150052**	**296305**	**367411**	**418155**	**468270**	**523396**	**575735**	**633309**	**685594**

Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
WORKING CIRCLE : NTFP OVERLAPPING												
1	Training & Data collection	April & March	170	187	206	226	249	274	301	331	364	401
	TOTAL		170	187	206	226	249	274	301	331	364	401
WORKING CIRCLE : WILDLIFE OVERLAPPING												
1	Data Collection, Constructing new water-holes & exhibition of boards	April & March	97	107	117	129	142	156	172	189	208	229
	TOTAL		**97**	**107**	**117**	**129**	**142**	**156**	**172**	**189**	**208**	**229**
WORKING CIRCLE :BAMBOO OVERLAPPING												
1	Improvement of existing bamboo in the forests	Oct & March	218	240	264	290	319	351	386	425	467	514
	TOTAL		**218**	**240**	**264**	**290**	**319**	**351**	**386**	**425**	**467**	**514**
WORKING CIRCLE :OLD PLANTATION MANAGEMENT												
1	Cleaning &thinning	Oct & March	1087	1196	1315	1447	1591	1751	1926	2118	2330	2563
	TOTAL		**1087**	**1196**	**1315**	**1447**	**1591**	**1751**	**1926**	**2118**	**2330**	**2563**
	GRAND TOTAL		**4659**	**170236**	**324331**	**402288**	**457377**	**511414**	**570855**	**627940**	**690734**	**748573**

Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
NON PLAN EXPENDITURE												
1	Wages (Maintenance, Buildings, Roads, Bridges1/5 the B'dary Demarcation)	April to March	14920	16412	18053	19859	21844	24029	26432	29075	31982	35181
2	Office Expenses	--//--	700	770	847	932	1025	1127	1240	1364	1501	1651
3	Petrol, Diesel	--//--	460	506	557	612	673	741	815	896	986	1085
4	Material & Supply	--//--	300	330	363	399	439	483	531	585	643	707
5	Salary	--//--	74078	81486	89634	98598	108458	119303	131234	144357	158793	174672
6	T.E.	--//--	274	301	332	365	401	441	485	534	587	646
7	Misc.	--//--	300	330	363	399	439	483	531	585	643	707
TOTAL			**91032**	**100135**	**110149**	**121164**	**133280**	**146608**	**161269**	**177396**	**195135**	**214649**

Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
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**									
			2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
WORKING CIRCLE : PROTECTION												
NIL												
WORKING CIRCLE : FODDER MANAGEMENT												
NIL												
WORKING CIRCLE : AFFORSTATION												
NIL												
WORKING CIRCLE :IMPROVEMENT												
1	Demarcation of coupes Area= 495.39ha. 0.5 M.D./ha.	Apr. & May	60	66	73	80	88	97	106	117	129	141
2	Marking of coupes Area = 495.39 ha. 0.5 M.D./ha.	Sept. to Nov.	60	66	73	80	88	97	106	117	129	141
3	Preparation of treatment maps 0.4 M.D./ha. Area= 495.39 ha.	October & November	48	53	58	64	70	77	85	94	103	113
4	Coupe working- a) Timber- 25 cum. @ 7.7 M.D./cum b) Firewood - 50 beats @ 4.26 M.D./beat	December & March	0	98	108	119	130	143	158	174	191	210
TOTAL			**168**	283	311	342	376	414	455	501	551	606

Sr No	Activities/ Operations and Their Norms	Period of working	YEARS									
			2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
WORKING CIRCLE : NTFP OVERLAPPING												
NIL												
WORKING CIRCLE : WILDLIFE OVERLAPPING												
NIL												
WORKING CIRCLE : BAMBOO OVERLAPPING												
NIL												
WORKING CIRCLE : OLD PLANTATION MANAGEMENT												
NIL												
GRAND TOTAL			**168**	**283**	**311**	**342**	**376**	**414**	**455**	**501**	**551**	**606**

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.242.54 per day for the year 2014-15 has been used to calculate the expenditure for the different items of works of both Development and Harvesting .

3.0 The figures of Expenditure in succeeding 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.

PART II - CHAPTER-XV

ESTABLISHMENT AND LABOUR

SECTION 1: ESTABLISHMENT

II-15.1.1 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 three ranges in Malegaon sub division. 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 Malegaon sub division is 81607.413 ha. which comprises mainly of plain.

SECTION 2 : LABOUR

II-15.2.1 Main activities of the Forest Department in Malegaon sub division are afforestation coupled with soil and moisture conservation works, nursery operations, grass cutting, forest protection, and selective removal of over mature 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.

Overall, 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 persuasion. 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 man days 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 2014-15 to 2018-19 and the same have been given in Table No. I & II. The details of calculation made have been explained in the Table itself.

Table 1							
MANDAYS ON DEVELOPMENT ACTIVITIES							
Wage rate Rs. 60:40 for (2013-14)							
DETAILS OF REGENERATION/DEVELOPMENT OPERATIONS AND MANDAYS TO BE GENERATED							
Sr. No.	**Activities/ Operations and Their Norms**	**Period of working**	**YEARS**				
			2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Working Circle : Protection							
1	Preparation of Treatment Map, 0.90 MD/ha Area = 1453.78 ha.	October to Dec	1308	1308	1308	1308	1308
2	Gully plugging & nalla bunding using locally available material (3.5 MD/ha.) Area= 1453.78 ha.	October to March	0	5088	5088	5088	5088
3	Cement nalla bunds of approved designed Area = 1453.78 ha. @ 9 MDs / Ha. +M.S Rs.283 / ha	October to March	0	13084	13084	13084	13084
4	Digging of contour trenches of size (2 x 0.60 x 0.30), 100 running meter per hectare 50 % of 1453.78ha. = 726.89 Ha 12 MDs per Ha.	October to March	0	8723	8723	8723	8723
5	Collection of Seed of local forest species and sowing by local staff (0.5 MD/ha.) Area=50 % 1453.78 ha = 726.89 ha.	January to June	0	363	363	363	363

Sr. No.	Activities/ Operations and Their Norms			Period of working	YEARS				
					2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
6	Fire tracing (7 M.D./Km , for 13.97 km.			December to February	98	98	98	98	98
7	Tending operations of rooted stock area / cleaning and stump dressing 50 % of total area 1453.78 ha. = 726.89 Ha. 10 MD/ Ha			October to March	0	7269	7269	7269	7269
8	Stump Plantation 5 % area OF 1453.78 ha. =72.69				0	0	0	0	0
	Items	M.D./ha	M & S/ha		0	0	0	0	0
	S.D.& Tr. Map	0.90	0	Oct. to Dec	65	65	65	65	65
	PPO	24.57	15.71	Oct. to March	0	1586	1586	1586	1586
	FYO	218.89	8124.72	Apr to Nov	0	0	15911	15911	15911
	SYO	167.20	1900.2	Jul to Oct	0	0	0	12154	12154
	TYO	37.00	0	Jul to Oct	0	0	0	0	2690
	As per GR Gram vikas jalsandharan vibhag No.SLF - 18/ 2006 PK - 82/Jal-12 Dtd 13.7.2006								
	Total of Protection W.C.				**1471**	**37584**	**53495**	**65649**	**68339**

Sr. No.	Activities/ Operations and Their Norms			Period of working	YEARS				
					2014-15	2015-16	2016-17	2017-18	2018-19
Working Circle : Improvement									
1	Fire tracing - For Forest Area 10.53 Kms @. 7 M.D./Km			Dec. to Feb.	74	74	74	74	74
2	Preparation of Treatment Map, 0.90 MD/ha Area = 495.39 ha.			Oct. to Dec.	446	446	446	446	446
3	(A)Area Category "A" 5 % of total area 495.39 ha = 24.77 ha I) Stump Dressing & cleaning 10 MD/ha.			Oct. to March	0	248	248	248	248
	ii) Gully plugging & Nalla bunding locally available material 3.5 MD/ha.			Oct. to March	0	87	87	87	87
	iii) Sowing & Dibbling of seed 0.5 MD/ha.			Apr. to June	0	12	12	12	12
	iv) Bamboo Planting 2 % of total area 24.77 ha =0.5 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	58	58	58	58
	FYO	83.00	2749	Apr to Nov	0	0	42	42	42
	SYO	57.00	900	Jul to Oct	0	0	0	29	29
	TYO	45.00	500	Jul to Oct	0	0	0	0	23
Sr. No.	Activities/ Operations and Their			Period of working	YEARS				

	Norms							
					2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
	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 495.39 ha= 222.93 ha I) Cleaning & Stump dressing 10 MD/ha.			Oct. to March	0	2229	2229	2229	2229
	ii) Teak Plantation 10 % of 222.93 ha.= 22.29 ha.								
	Items	M.D./ha	M & S/ha.						
	PPO	24.57	15.71	Oct to Mar	0	548	548	548	548
	FYO	218.89	8124.72	Apr to Nov	0	0	4879	4879	4879
	SYO	167.20	1900.31	Jul to Oct	0	0	0	3727	3727
	TYO	37.00	--	Jul to Oct	0	0	0	0	0
	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" & "D" 50 % of total area 495.39ha= 247.70 ha I) Stump dressing &Cleaning 10 MD/ha.			Oct. to March	0	2477	2477	2477	2477
	Total of Improvement W.C.				**520**	**6179**	**11100**	**14856**	**14879**

Sr. No.	Activities/ Operations and Their Norms	Period of working	YEARS				
			2014-15	2015-16	2016-17	2017-18	2018-19
Working Circle : Fodder Management							
1	Preparation of Treatment Map, 0.90 MD/ha Area = 365.31 ha.	Oct. to Dec	329	329	329	329	329
2	TCM ,New : Repair, 20:80 @ 40mt/ha or @ 30MD/ha for new and @ 10 MD/ha for Repair Annual area=365.31 ha	Oct. to March	0	5114	5114	5114	5114
3	Fire tracing work annual @.0.54 M.D. /ha. Area = 3287.826 ha.	Oct. to March	1775	1775	1775	1775	1775
4	Type A 5% of 365.31 ha = 18.27 ha.		0	0	0	0	0
	I) Gully plugging & Nalla bunding 3.5 MD/ha.	Oct. to March	0	64	64	64	64
	ii) Preparation of WATs for 18.27 ha 0.60 X 0.30 X 1 M @ 100Rmt/ ha 12MD/ha	Oct. to March	0	219	219	219	219
	iii) Collection of seed and sowing by staff 0.5 MD/ha.	Jan to June	0	9	9	9	9
	iv)Agave Planting on TCM Nursery cost & planting with transportation of 300 Agave/ha for 18.27 ha @ 2.4 MD/ha	October to June	44	44	44	44	44
5	Type B 85% of total area 365.31 ha. = 310.51 ha.		0	0	0	0	0

Sr. No.	Activities/ Operations and Their Norms	Period of working	YEARS				
			2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
	i) Gully plugging & Nalla bunding 3.5 MD/ha.	Oct. to March	0	1087	1087	1087	1087
6	i) Sloppy area 15% of 310.51 ha= 46.58 ha.		0	0	0	0	0
	250 trenches/ ha digging of size 4 X 0.60 X0.30 mts @0.36 MD per trenches	Dec. to July	0	4192	4192	4192	4192
	ii)plain area 70 % of 310.51 ha = 217.36 ha.		0	0	0	0	0
	a) Digging of CCT 500 Rmts/ ha. Or 45MD/ha.	Dec. to July	0	9781	9781	9781	9781
	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	Dec. to July	0	3179	3179	3179	3179
	1.Nursery cost for Tussocks Rs.230/1000 Including planting of tussocks 6 M.D. / 4166 Model No.4	Oct. to June	1863	1863	1863	1863	1863
7	Type C = 5 % 365.31 Ha. = 18.27 Ha. Thining / Cleanning10 M.D. per Ha.		0	182	182	182	182
8	Type D 5% of 365.31 /ha. = 18.27 ha. Cleanning 10 M.D. / Ha.		0	182	182	182	182
	Total of Fodder Management working circle		**4011**	**28020**	**28020**	**28020**	**28020**

Sr. No.	Activities/ Operations and Their Norms	Period of working	YEARS				
			2014-15	2015-16	2016-17	2017-18	2018-19
Working Circle :Afforestation Working Circle							
1	Fire tracing - For Forest Area 194.72 Kms @. 7 M.D./Km	Dec. to Feb.	1363	1363	1363	1363	1363
2	Preparation of Treatment Map, 0.90 MD/ha Area = 2333.52 ha.	Oct. to Dec.	2100	2100	2100	2100	2100
3	Afforstation Area Type A 5 % of 2333.52 ha.= 116.68ha.		0	0	0	0	0
	SMC Works i) Gully plugging & Nalla bunding using locally available material 3.5 MD/ha.	Oct. to March	0	408	408	408	408
	ii) Collection of seeds of local species & sowing by staff 0.5 MD/ha.	Jan. to June	58	58	58	58	58
	Type B 94 % of 2333.52 ha = 2193.52 ha		0	0	0	0	0

Sr. No.	Activities/ Operations and Their Norms			Period of working	YEARS				
					2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
	Planting				0	0	0	0	0
	Items	M.D./ha	M & S/ha.						
	S.D. and Tr. Map	0.90		Oct. to Dec	1994	1994	1994	1994	1994
	PPO	275.50		Oct. to March	0	604309	604309	604309	604309
	FYO	246.70		Apr to Nov	0	0	541136	541136	541136
	SYO	77.96		Jul to Oct	0	0	0	171005	171005
	TYO	26.32		Jul to Oct	0	0	0	0	57733
	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.			Oct. to March	0	7677	7677	7677	7677
	Type C 0.5 % of 2213.18 ha = 11 ha area Cleaning= 10 MD/ha			Oct. to March	0	117	117	117	117
	Type D 0.5 % of 2213.18ha = 11 ha area Cleaning= 10 MD/ha			Oct. to March	0	117	117	117	117
	Total of Afforestation working circle				**5115**	**618143**	**1159279**	**1330284**	**1388017**

DETAILS OF MANDAYS								
Sr. No.	**Activities/ Operations and Their Norms**	**Period of Working**	**YEARS**				
			2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
WORKING CIRCLE : NTFP OVERLAPPING							
1	Training & Data collection	April and 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 and 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 and March	900	900	900	900	900
	TOTAL		900	900	900	900	900
WORKING CIRCLE :OLD PLANTATION MANAGEMENT							
1	Cleaning & thinning	Oct and March	4480	4480	4480	4480	4480
	TOTAL		4480	4480	4480	4480	4480
NON PLAN							
1	Wages (Maintenance, Buildings, Roads, Bridges1/5 th B'dary Demarcation)	April to March	61516	61516	61516	61516	61516
TOTAL			61516	61516	61516	61516	61516

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				
			2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
WORKING CIRCLE : PROTECTION							
NIL							
WORKING CIRCLE : FODDER MANAGEMENT							
NIL							
WORKING CIRCLE : AFFORSTATION							
NIL							
WORKING CIRCLE :IMPROVEMENT							
1	Demarcation of coupes Area= 495.39 ha. 0.5 M.D./ha.	April and May	248	248	248	248	248
2	Marking of coupes Area = 295.39 ha. 0.5 M.D./ha.	Sept. to Nov.	248	248	248	248	248
3	Preparation of treatment maps 0.4 M.D./ha. Area= 495.39 ha.	Oct. and Nov.	198	198	198	198	198
4	Coupe working- a) Timber- 25 cum. @ 7.7 M.D./cum b) Firewood - 50 beats @ 4.26 M.D./beat	Dec. and March	0	406	406	406	406
TOTAL			**694**	**1100**	**1100**	**1100**	**1100**

Sr. No.	Activities/ Operations and Their Norms	Period of Working	YEARS				
			2014-15	2015-16	2016-17	2017-18	2018-19
WORKING CIRCLE : NTFP OVERLAPPING							
NIL							
WORKING CIRCLE : WILDLIFE OVERLAPPING							
NIL							
WORKING CIRCLE : BAMBOO OVERLAPPING							
NIL							
WORKING CIRCLE : OLD PLANTATION MANAGEMENT							
NIL							
GRAND TOTAL			**694**	**1100**	**1100**	**1100**	**1100**

NOTE :	
	1.0 Mandays 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 afforestation total area of the working circle a 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.& Improvement 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.

PART II

CHAPTER-XVI

CONTROL AND RECORDS

SECTION I: CONTROL FORMS:

II-16.1.1 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 SDFO Malegaon sub division each. The SDFO Malegaon sub division will annually make entries in his copy of control forms and send them together with deviation statement in triplicate to CF working plan through territorial CCF. After the entries have been checked and approved, the working plan Conservator of Forests will first get his copy completed and then send the SDOF's copy to territorial CCF. The latter will then complete his copy and finally return the SDOF's copy for next year. The Conservator of Forests working plan will send three copies of deviation statement to PCCF (Production and Management) for sanction. After the sanction, one copy each will be sent to territorial CCF and SDFO for their record and Conservator of Forests working plan will retain the third copy. The control forms should be submitted by the SDFO to territorial CCF by the end of November. The latter will then send them to Conservator of Forests working plan before January each year. The format of the control forms is given in **Appendix II. XVI.1**

SECTION 2: COMPARTMENT HISTORIES:

II-16.2.1 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. II. XVI.2**

Form No. 1 Description of the compartment

Form No. 2 Record of Plantation and changes in growing stock

Form No. 3 Register of operations and out-turn

Form No. 4 Record of observations

From No. 5 Record of fires

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 . will be recorded. Every year in the month of July, RFO will fill-up the information and send it to SDFO Malegaon sub division. The SDFO 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 Sub divisional office. 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:

II-16.3.1 Plantation registers will be maintained for all the plantations in the standard format given in **appendix II, XVI-3.** Similarly nursery register will be maintained for each nursery in the standard format given in **appendix II XVI-4**.

SECTION 4: DIVISIONAL JOURNAL:

II-16.4.1 SDFO Malegaon sub division will maintain a Sub divisional journal which will include the matters of Sub 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 divisional journal is given in **Appendix II XVI-5**.

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