

PART-II
FUTURE MANAGEMENT

BONAI FOREST DIVISION

PART II

CHAPTER -1

BASIS OF PROPOSALS

Forest plays a multidimensional role in sustaining all kinds of life forms. Human being, along with other life forms, is dependent upon the forest for their various essential needs and requirements. Environmental stability and hence the ecological balance is the need of the day and can only be achieved with sincere and dedicated efforts for conserving and preserving the forest resources in perpetuity. In recent years there has been paradigm shift in the policy and approach to the forestry sector both nationally and internationally. The focus has shifted from timber harvesting to environmental stability, biodiversity conservation, restoration of ecological balance of the disturbed areas, protection of forest, management of forest to cater to need of the present generation keeping the need of future generation and other socio-economic benefits based on Non Timber Forest Produces (NTFP). In the present scenario, climate change has greater impact on forest eco-system. Impact of climate change on forest eco-system is getting manifested as species range shifts, changing biodiversity, physiological changes in plant life cycle, forest growth pattern of the species. United Nations Framework Convention on Climate Change (UNFCCC) has adopted forest conservation, sustainable management of forests and enhancement of carbon stocks as tools for climate change mitigation.

In consonance with the National Forest Policy 1988, the basic aim of management of forests covered under this plan will be to meet as far as possible the increasing demand of forest produce without disturbing the fragile environmental stability and ecological balance which are so vital for the sustenance of all life forms. In order to achieve these dual objectives simultaneously rehabilitation and afforestation measures need to be adopted by following suitable silvicultural principles.

1.1 Objectives of Management: In consonance with the National Forest Policy 1988, the basic aim of management of forests covered under this plan will be to meet as far as possible the increasing demand of forest produce without disturbing the fragile environmental stability and ecological balance which are so vital for the sustenance of all life forms. In order to achieve these dual objectives simultaneously, forest resources shall be managed for the conservation of biodiversity encompassing the ecological, economic and social dimensions with a goal to achieve sustained yield & minimizing the effect of climate change.

1.1.1. General Objectives of Management:-With the above said aim in view, the general objectives of management have been discussed under the following heads.

1.1.1.1 Dynamics of forest and stands.

- i. To prevent the further degradation of environment by restricting felling of trees and giving more emphasis on preservation of flora and fauna of these forests.
- ii. To improve the condition, composition and productivity of the existing forests by further enriching the standing crop through scientific management.
- iii. To increase productivity of forests ecosystem and maintain the vitality.
- iv. To rehabilitate the depleted forest through artificial regeneration and tending of the existing vegetation

1.1.1.2 Forests and Soils.

- i. To rehabilitate the barren, degraded and depleted forest areas and mining degraded areas through artificial regeneration and by adopting various soil conservation measures.
- ii. To reduce soil erosion, enhance fertility of Soil and ensure the stability of forest ecosystem.

1.1.1.3 Forest and water.

- i. To conserve and improve the existing vegetative-cover for soil and water conservation with a view to ensure ecological and environmental stability.
- ii. To conserve water sources, enhance water conservation capacity of forest ecosystem and assist in regulating the flow of water in its catchment.
- iii. To construct water harvesting structures, checkdams, plug gullies and protect river banks, nala banks on either side.

1.1.1.4 Forest Biodiversity.

- i. To protect and manage wildlife resources with a view to conserve and enrich biodiversity.
- ii. To conserve genetic resources and maintain their sustainable use.
- iii. To assess the biodiversity of forest periodically and improve the Important Value Index of species.
- iv. To ensure enforcement of various acts and rules existing to protect biodiversity

1.1.1.5 Climate and Forests.

- i. To reduce emissions from deforestation and forest degradation
- ii. To enhance Carbon Sequestration in forest by following most desirable level of biomass production and find ways for adoption with change in climate
- iii. To manage and improve forests outside recorded forest areas.

1.1.1.6 Socioeconomic consideration and generation of forest based Employment opportunities and livelihood options.

- i. To endeavor to meet the requirements of people for agricultural small timbers, firewood, bamboos and other forest produces.
- ii. To promote development of sustainable and non-destructive livelihood opportunities for local communities

- iii. To promote Joint Forest Management involving Vana Samrakhyana Samitis for sustainable management of forests.
- iv. To ensure sustainable production of Non-Timber Forest Produce and thus enhance livelihood opportunities of the communities dependent on forests.
- v. To meet needs and requirements related to forest produce of local people and local communities living in and around forest areas.
- vi. To enhance their livelihood, ensure usufruct benefit sharing and protect their traditional knowledge and traditional/cultural practices.
- vii. To generate employment for local people by involving them in various forestry operations including collection of various Non Timber Forest Produce (NTFP) inducing a sense of belonging for the forest in them.

1.1.1.7 Tools for integrated development.

- i. To introduce tools for scientific management of the forests.
- ii. To take up the infra structure development for integrated development of the Division.

1.1.1.8. Public awareness

- i. To educate people regarding the importance of conservation of nature and natural resources through proper measures.
- ii. To ensure capacity building of local forest dependent community towards conservation of nature and natural resources.

1.2 Method of treatment to be adopted:-

1.2.1. To fulfil the above cited objectives, required change in management practices has been made and accordingly forest areas have been allotted to different Working Circles. In Working Plans prepared for the Division in the past, Sal forest areas lying on moderately hilly and plain areas have been kept under Selection Working Circle and Sal Conversion

Working Circle with the objectives to obtain maximum sustained yield of large size timber of high quality. But most of these objectives could not be achieved because of various constraints and adverse factors like ever increasing population pressure, uncontrolled fire hazards, excessive grazing, and illicit removal of forest produce and due to continuous operation of large number of mining projects in these areas. In most of these areas, the regeneration is poor in general and even absent in some localities. Status of growth of pole crop which need to serve as future crop is also not satisfactory. Because of these reasons, these forests are now proposed to be worked under Selection System along with suitable silvicultural operations including opening the canopy in order to create favourable conditions for natural regeneration.

1.2.2. Most of the forests which have been worked under Selection System in the past are having limited number of exploitable girth class trees at present. Hence, restricted marking and felling is being prescribed for all the forest areas which are now to be worked under Selection-cum-Improvement system of management and more emphasis will be given to various subsidiary silvicultural operations for improving the quality of growing stock. Eco-fragile areas, encroached areas, Podu affected areas, deforested but not yet dereserved forest areas are to be treated separately. Forest areas having crop density less than 0.4 are to be treated to improve forest vegetation by taking up soil and moisture conservation measures, tending operation over the existing forest crop with gap planting.

1.2.3. The existing growth in the natural forest will be tended to bring it to a level where it will grow on its own. Degraded, depleted and blank areas will be planted with the indigenous species. The existing plantation areas are to be treated separately and suitable forest areas are to be planted to restock the forest crops. Bamboo forests have been degraded in their potentiality to an alarming level. There is an urgent need to increase the productive potential of these forests, preferably through cultural operations and by strictly following the cutting rules at the time of working of clumps in Bamboo Coupes. Forests have become a source of livelihood for the local tribal forest dependent community .They

collect Non Timber Forest Produces like Sal seeds, Sal leaves, Siali leaves, Siali fibres, Char seeds, Kusum seeds, Mohua flowers, Mohua seeds, medicinal plants, roots etc. and sell to middle men. There is a need to assess the potentiality of NTFPs and create a market facility for NTFP collectors.

1.2.4. Bonai Forest Division especially forests of Koira Range and Barsuan are rich in Iron ores and Manganese ores. Mining activities are going on since long to supply the raw materials to Iron and Steel Industries. There is a need to improve the mining affected forest areas and fulfil the demand of raw materials without causing damage to forests. Govt. of Odisha in Forest & Environment Department has brought a Resolution on dated 03.07.1993 for involvement of local people in protection of fringe forests forming Van Samrakshyana Samities. A total of 299 nos of VSS have already been formed in the Division as on 31.3.2020. There is a need to manage jointly the forest areas allotted to these VSSs. Forests of this Division are also rich in Wildlife. Due to habitat destruction, man animal conflicts are rising. There is a need to protect the wildlife habitats and to address the man-animal conflict scenario.

1.3 Constitution of Working Circles: Keeping the above mentioned facts and objectives in mind, and to achieve the above listed objectives, the following Working Circles are constituted for management of forests of Bonai Forest Division.

1. Selection Working Circle.
2. Protection Working Circle
3. Rehabilitation Working Circle.
4. Plantation Working Circle
5. Bamboo (Overlapping) Working Circle.
6. NTFP (Overlapping) Working Circle.
7. JFM (Overlapping) Working Circle.
8. Wildlife (Overlapping) Working Circle.

1.3.1 Selection Working Circle: This working circle includes the Sal as well as miscellaneous forests situated in the terrains varying from level plain to steep hilly slopes. Forest areas which were worked under Selection Working Circle in the previous plan for the period from 1997-98 to 2016-17 are included in this Working Circle. Rushimath-II PRF and Jada PRF have been included newly to this working circle. The total area under this working circle is 109040.268 ha. (Notified area), however the computed area is 105558.787 ha., excluding the diverted area under FC Act, 1980 and F.R.A., 2006.

1.3.2 Protection Working Circle:

1.3.2.1 This working circle includes the forest areas which could not be allotted to any other working circle owing to their special nature, requiring very specific silvicultural treatment or administrative measures, such as

- (i) Ecologically fragile areas covering entire Khandadhar R.F.
- (ii) Areas under active encroachment for cultivation and habitation purposes
- (iii) Areas subjected to shifting cultivation in the recent past or currently under this practice.
- (iv) Areas which have already been deforested for the purpose of resettlement of the displaced people but yet to be dereserved.

1.3.2.2 The main objective of this working circle is to provide and maintain suitable vegetative cover in the catchment areas of Khandadhar nallah and to maintain proper records of deforested and encroached, shifting cultivated areas till their final dereservation, evacuation or eviction as the case may be. This Working Circle includes the forest areas which were worked under Protection Working Circle in the previous Revised Working Plan for the period from 1997-98 to 2016-17. Kathmal PRF has been excluded from Protection Working Circle and kept under Rehabilitation Working Circle. Part of Khandadhar RF has also been excluded and kept under Rehabilitation Working Circle. The total area (computed) allotted to this working circle is 7558.700ha.

1.3.3 Rehabilitation Working Circle:-This working circle includes the forest areas which have already been degraded to great extent. The average crop density of these areas is less than 0.4. A good proportion of the areas of PRF blocks Nagaria, Sarkunda, Gonua and khajurdihi had been under pernicious practice of shifting cultivation in the past and such portions are either open or covered with bushy growth of weeds and grasses. Part of the forest areas worked under the Rehabilitation-cum- Plantation Working Circle in the previous Revised Working Plan for the period from 1997-98 to 2016-17 are included in this Working Circle. Further 25 nos of demarcated protected forests covering an area of 5849.793 ha. are also included in this Working Circle. The total area allotted this Working Circle is 20325.275 ha(computed area).

1.3.4 Plantation Working Circle:- Part of forest areas worked under the Rehabilitation-cum- Plantation Working Circle in the previous Revised Working Plan for the period from 1997-98 to 2016-17 are included in this Working Circle. In addition to that, 29 no. of Protected Forests covering an area of 575.654 ha.and 32 nos of Village Forests covering an area of 166.790 ha. have also been included in this Working Circle. This Working Circle includes the forest areas covered under Block Plantation in Artificial Regeneration activities during the previous Plan periods and the blank patches of forest areas available in different forest blocks over which plantation can be raised during the present Plan period i.e. from 2021-22 to 2030-31. The total area allotted to Working Circle is 3839.840 ha. (computed area).

1.3.5 Bamboo (Over Lapping) Working Circle:This working circle includes forest areas having reasonably good bamboo growth. This working circle overlaps with the bamboo bearing areas of Selection Working Circle and Rehabilitation Working Circle. Bamboo bearing areas of 7 PRF blocks are also incorporated in this working circle. Areas covered under this working circle is computed to be 65082.505ha.

1.3.6 NTFP (Over Lapping) Working Circle: This Working Circle overlaps all other working circles. The constitution of separate working circle for NTFP is felt necessary since Bonai Forest Division is very rich in many non-timber forest produce (NTFP). Better management and extraction of NTFP can play a vital role in the rural economy. Area covered under this Working Circle is computed to be 137282.602 ha. (Computed area)

1.3.7 JFM (Over Lapping) Working Circle: This Working Circle will cover areas allotted to 299 nos of VanaSamrakshana Samities and the suitable areas adjoining to fringe villages that can be allotted to new VSS in the present plan period. Total area allocated to this working circle is computed to be 14135.968 ha.including Village Forest areas of 166.790 ha.

1.3.8 Wildlife (Overlapping) Working Circle: This working circle overlaps with areas of all other working circles. Wildlife is an integral aspect of forest ecosystem and there is paramount need to protect them and improve their habitats by taking suitable protection and management measures. Keeping in view of above facts, the Wild Life (Overlapping) Working Circle has been constituted so that comprehensive development measures could be taken up for conservation of wildlife. Total area under this working circle is computed to be 137282.602 ha.

1.3.9. Period of working plan and necessity for intermediate revision: The period of Revised Working Plan will be for ten years from 2021-22 to 2030-31. If necessary, revision of prescriptions of Working Circles will be taken up after completion of five years of Plan period, under the guidance of Regional Chief Conservator of Forests,Rourkela.

1.3.10. Forest Areas Allotted to different Working Circles : While allotting forest areas to different Working Circles, the computed area of different Forest Blocks have been taken in to account. Since areas of compartments and sub compartments of same forest blocks were needed to be distributed among various working circles, computing areas corresponds to these compartments and sub compartments were necessary. Since these areas were not readily available in the notification of forest blocks or GIS survey reports, computation was necessary. Hence, the computed areas of previous Plan period have been taken while prescribing different Working Circles. Further, areas diverted under Forest Conservation Act and areas over which title rights have been granted under Forest Right Act shall be excluded from the prescriptions of the Working Plan. The details of areas allotted to different Working Circles are given in the fo **Table No.1.3.10.1**. The forest areas diverted under FRA and under FC Act are provided in **Table No.1.3.10.2**.

**Table No.1.3.10.1: FOREST AREA ALLOTTED TO DIFFERENT
WORKING CIRCLES IN BONAI DIVISION.**

Sl. No	Name of the Range	Name of the Forest Block	Area in Ha. (Computed area)	Area Diverted (in Ha.)		Area under this Plan in Ha.	Area allotted to different Working Circles								Un-classed Forests
				Under FRA	Under FC Act.		SWC	RWC	Plantation WC	Protection WC	Bamboo (O) WC	NTPF (O) WC	Wildlife (O) WC	JFM (O) WC	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Bonai	Dandapat East RF	409.500	-	-	409.500	409.500	-	-	-	-	409.500	409.500	102.000	-
2	Bonai	Dandapat West RF	2,294.063	-	-	2,294.063	2,294.063	-	-	-	-	2,294.063	2,294.063	377.000	-
3	Bonai	Budhapahar RF	1,071.750	-	-	1,071.750	1,064.465	-	7.285	-	1,064.465	1,071.750	1,071.750	211.000	-
4	Bonai	Sinduria RF	1,144.881	-	-	1,144.881	1,034.157	-	110.724	-	1,034.157	1,144.881	1,144.881	130.000	-
5	Bonai/Jarda	Ulsura RF	1,400.061	-	-	1,400.061	1,387.192	-	-	12.869	1,387.192	1,400.061	1,400.061	127.000	-
6	Bonai	Kello-B RF	207.204	-	-	207.204	-	-	207.204	-	-	207.204	207.204	140.000	-
7	Bonai	Kendrikela RF	196.276	0.368	0.817	195.091	-	-	195.091	-	-	195.091	195.091	156.530	-
8	Bonai	Dharanidhar pali RF	178.066	-	-	178.066	-	-	178.066	-	-	178.066	178.066	156.000	-
9	Bonai	Gogua RF	131.121	-	-	131.121	-	-	131.121	-	-	131.121	131.121	118.980	-
10	Bonai	Hulku RF	30.757	-	-	30.757	-	-	30.757	-	-	30.757	30.757	30.750	-
11	Bonai	Baghiakucha RF	74.464	-	1.101	73.363	-	-	73.363	-	-	73.363	73.363	-	-
12	Bonai	Baliatota RF	46.945	-	-	46.945	-	-	46.945	-	-	46.945	46.945	46.940	-
13	Bonai	Bonarai RF	66.775	-	-	66.775	-	-	66.775	-	-	66.775	66.775	66.660	-
14	Bonai	Chandiposh RF	61.918	-	-	61.918	-	-	61.918	-	-	61.918	61.918	61.918	-
15	Bonai	Jankinagar RF	95.913	-	-	95.913	-	-	95.913	-	-	95.913	95.913	-	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16	Bonai	Talita RF	101.983	-	-	101.983	-	-	101.983	-	-	101.983	101.983	101.980	-
17	Bonai	Sundhikon RF	62.323	-	-	62.323	-	-	62.323	-	-	62.323	62.323	62.320	-
18	Bonai	Bandhabhui n-Bhadimara PRF	851.125	-	-	851.125	851.125	-	-	-	-	851.125	851.125	629.240	-
19	Bonai	Budhapahar 'B' PRF-Part-I	273.438	-	-	273.438	273.438	-	-	-	-	273.438	273.438	-	-
20	Bonai	Budhapahar 'B' PRF-Part-II	119.063	-	-	119.063	119.063	-	-	-	-	119.063	119.063	-	-
21	Bonai	Ulundapahar DPF	167.770	-	-	167.770	-	167.770	-	-	-	167.770	167.770	104.710	-
22	Bonai	Dandpat DPF	619.182	-	-	619.182	-	619.182	-	-	-	619.182	619.182	-	-
23	Bonai	Dandpat Hill Block DPF	669.770	-	-	669.770	-	669.770	-	-	-	669.770	669.770	-	-
24	Bonai	Dalki-Rajanbeda DPF	47.102	-	-	47.102	-	47.102	-	-	-	47.102	47.102	-	-
25	Bonai	Padagoth DPF	1,010.602	-	-	1,010.602	-	1,010.602	-	-	-	1,010.602	1,010.602	-	-
26	Bonai	Bijakuli-Beldihi DPF	658.230	-	-	658.230	-	658.230	-	-	-	658.230	658.230	407.820	-
27	Bonai	Barachhapal -Pankihuli DPF	60.582	-	-	60.582	-	60.582	-	-	-	60.582	60.582	-	-
28	Bonai	Bandhabhui n-Dakmunda DPF	283.083	-	-	283.083	-	283.083	-	-	-	283.083	283.083	-	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
29	Bonai	Bad-Baurkela VF	5.422	-	-	5.422	-	-	5.422	-	-	5.422	5.422	5.422	-
30	Bonai	Gopinathpur VF	1.934	-	-	1.934	-	-	1.934	-	-	1.934	1.934	1.934	-
31	Bonai	Kenaveta VF	3.439	-	-	3.439	-	-	3.439	-	-	3.439	3.439	3.439	-
32	Bonai	Uparbahal VF	1.092	-	-	1.092	-	-	1.092	-	-	1.092	1.092	1.092	-
33	Bonai	San Bhalbunguri VF	5.058	-	-	5.058	-	-	5.058	-	-	5.058	5.058	5.058	-
34	Bonai	Govindpur VF	5.058	-	-	5.058	-	-	5.058	-	-	5.058	5.058	5.058	-
35	Bonai	Dareikela VF	1.315	-	-	1.315	-	-	1.315	-	-	1.315	1.315	1.315	-
36	Bonai	Uparpada VF	10.117	-	-	10.117	-	-	10.117	-	-	10.117	10.117	10.117	-
37	Bonai	San Gogua VF	6.070	-	-	6.070	-	-	6.070	-	-	6.070	6.070	6.070	-
38	Bonai	Babu Nuagaon VF	7.082	-	-	7.082	-	-	7.082	-	-	7.082	7.082	7.082	-
39	Bonai	Bandadihi VF	4.350	-	-	4.350	-	-	4.350	-	-	4.350	4.350	4.350	-
40	Bonai	Bad Baurkela VF	5.058	-	-	5.058	-	-	5.058	-	-	5.058	5.058	5.058	-
41	Bonai	Balitakudar VF	10.000	-	-	10.000	-	-	10.000	-	-	10.000	10.000	10.000	-
42	Bonai	Kasada VF	8.000	-	-	8.000	-	-	8.000	-	-	8.000	8.000	8.000	-
43	Bonai	Kulkutta PF	15.338	-	-	15.338	-	-	15.338	-	-	15.338	15.338	-	-
44	Bonai	Nuadihi PF	16.422	-	-	16.422	-	-	16.422	-	-	16.422	16.422	-	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
45	Bonai	San-Nikitimal PF	104.310	-	-	104.310	-	-	104.310	-	-	104.310	104.310	-	-
46	Bonai	San-Sibnathpur PF	1.335	-	-	1.335	-	-	1.335	-	-	1.335	1.335	-	-
47	Bonai	San-Sibnathpur PF	20.570	-	-	20.570	-	-	20.570	-	-	20.570	20.570	-	-
48	Bonai	Nuadihi PF	9.618	-	-	9.618	-	-	9.618	-	-	9.618	9.618	-	-
49	Bonai	San-Sibnathpur PF	17.850	-	-	17.850	-	-	17.850	-	-	17.850	17.850	-	-
50	Bonai	San-Sibnathpur PF	10.800	-	-	10.800	-	-	10.800	-	-	10.800	10.800	-	-
51	Bonai	San-Katuridhua PF	37.146	-	-	37.146	-	-	37.146	-	-	37.146	37.146	-	-
52	Bonai	Sisudihi PF	7.719	-	-	7.719	-	-	7.719	-	-	7.719	7.719	-	-
53	Bonai	Babunuagao n PF	1.228	-	-	1.228	-	-	1.228	-	-	1.228	1.228	-	-
Bonai Total:-			12,650.278	0.368	1.918	12,647.992	7,433.003	3,516.321	1,685.799	12.869	3,485.814	12,647.992	12,647.992	3,104.843	-
54	Kulipos/ Barsuan	Amrudhi RF	2,408.620	-	-	2,408.620	1,374.119	860.688	-	173.813	-	2,408.620	2,408.620	506.000	-
55	Kuliposh	Kundheibira RF	260.437	-	-	260.437	-	260.437	-	-	-	260.437	260.437	60.000	-
56	Kuliposh	Lunga RF	5,242.146	-	-	5,242.146	5,242.146	-	-	-	1,528.709	5,242.146	5,242.146	1,124.300	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
57	Kuliposh	Mahulpada RF	4,565.000	0.600	-	4,564.400	3,402.550	720.953	440.897	-	3,402.550	4,564.400	4,564.400	336.000	-
58	Kulipos/ Barsuan	Nagaria PRF	9,684.811	0.677	570.380	9,113.754	4,983.881	972.187	-	3,157.686	-	9,113.754	9,113.754	515.060	-
59	Kuliposh	Budhapahar (A)PRF	685.938	-	-	685.938	-	665.938	20.000	-	-	685.938	685.938	127.000	-
60	Kuliposh	Lunga PRF	257.063	-	-	257.063	257.063	-	-	-	-	257.063	257.063	40.000	-
61	Kuliposh /Barsua n	Amurdii PRF	1,580.500	-	-	1,580.500	-	1,480.500	100.000	-	-	1,580.500	1,580.500	523.000	-
62	Kuliposh	Talbahali- Barhaguda PRF	347.813	-	-	347.813	-	247.813	100.000	-	-	347.813	347.813	154.270	-
63	Kuliposh	Singardei DPF	111.323	-	-	111.323	-	111.323	-	-	-	111.323	111.323	111.320	-
64	Kuliposh	Kumundi DPF	121.914	-	-	121.914	-	121.914	-	-	-	121.914	121.914	-	-
65	Kuliposh	Jagati DPF	73.613	-	-	73.613	-	73.613	-	-	-	73.613	73.613	-	-
66	Kuliposh	Kadadihi VF	2.023	-	-	2.023	-	-	2.023	-	-	2.023	2.023	2.023	-
67	Kuliposh	Ruguda VF	5.058	-	-	5.058	-	-	5.058	-	-	5.058	5.058	5.058	-
68	Kuliposh	Sihidiha VF	5.058	-	-	5.058	-	-	5.058	-	-	5.058	5.058	5.058	-
69	Kuliposh	Mahuldiha VF	1.011	-	-	1.011	-	-	1.011	-	-	1.011	1.011	1.011	-
70	Kuliposh	Ruguda VF	5.058	-	-	5.058	-	-	5.058	-	-	5.058	5.058	5.058	-
71	Kuliposh	Tankjoda VF	0.809	-	-	0.809	-	-	0.809	-	-	0.809	0.809	0.809	-
72	Kuliposh	Madhupur VF	1.416	-	-	1.416	-	-	1.416	-	-	1.416	1.416	1.416	-
73	Kuliposh	Belkudar VF	4.000	-	-	4.000	-	-	4.000	-	-	4.000	4.000	4.000	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
74	Kuliposh	Basubahal VF	3.600	-	-	3.600	-	-	3.600	-	-	3.600	3.600	3.600	-
75	Kuliposh	Gadruan VF	8.000	-	-	8.000	-	-	8.000	-	-	8.000	8.000	8.000	-
76	Kuliposh	Kanujoda VF	6.000	-	-	6.000	-	-	6.000	-	-	6.000	6.000	6.000	-
77	Kuliposh	Ruguda VF	10.000	-	-	10.000	-	-	10.000	-	-	10.000	10.000	10.000	-
78	Kuliposh	Bichhanapati VF	4.000	-	-	4.000	-	-	4.000	-	-	4.000	4.000	4.000	-
79	Kuliposh	Rangamatia VF	6.000	-	-	6.000	-	-	6.000	-	-	6.000	6.000	6.000	-
80	Kuliposh	Sanjal (B) PF	16.106	-	-	16.106	-	-	16.106	-	-	16.106	16.106	-	-
81	Kuliposh	Fuljhar (B) PF	16.187	-	-	16.187	-	-	16.187	-	-	16.187	16.187	-	-
82	Kuliposh	Fuljhar(A)PF	5.698	-	-	5.698	-	-	5.698	-	-	5.698	5.698	-	-
83	Kuliposh	Badjal PF	24.282	-	-	24.282	-	-	24.282	-	-	24.282	24.282	-	-
84	Kuliposh	Ladapani PF	9.162	-	-	9.162	-	-	9.162	-	-	9.162	9.162	-	-
85	Kuliposh	Sanjal (A) PF	14.941	-	-	14.941	-	-	14.941	-	-	14.941	14.941	-	-
86	Kuliposh	Banki PF	16.390	-	-	16.390	-	-	16.390	-	-	16.390	16.390	-	-
87	Kuliposh	Sadhubahal PF	15.783	-	-	15.783	-	-	15.783	-	-	15.783	15.783	-	-
88	Kuliposh	Barhaguda PF	4.046	-	-	4.046	-	-	4.046	-	-	4.046	4.046	-	-
89	Kuliposh	Khuntgaon PF	11.068	-	-	11.068	-	-	11.068	-	-	11.068	11.068	-	-
Kuliposh Total:-			25,534.874	1.277	570.380	24,963.217	15,259.759	5,515.366	856.593	3,331.499	4,931.259	24,963.217	24,963.217	3,558.983	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
90	Barsuan & Koira	Khajurdihi RF	2,144.312	-	-	2,144.312	2,144.312	-	-	-	-	2,144.312	2,144.312	-	-
91	Koira	Kathmal RF	101.174	-	91.088	10.086	10.086	-	-	-	-	10.086	10.086		-
92	Koira	Mendhamar uni RF	512.937	-	-	512.937	287.750	-	225.187	-	-	512.937	512.937	25.000	-
93	Koira	Rakshi-I RF	1,796.289	-	-	1,796.289	1,157.834	-	283.286	355.169	-	1,796.289	1,796.289	-	-
94	Koira/ Barsuan	Bhabanipah ad RF	370.295	0.438	4.075	365.782	-	-	161.187	204.595	-	365.782	365.782	-	-
95	Koira/ Barsuan	Toda RF	15,703.988	1.156	2,134.69 1	13,568.141	12,572.171	-	-	995.970	-	13,568.141	13,568.141	440.400	-
96	Koira	Karo RF	1,419.063	0.432	12.615	1,406.016	1,406.016	-	-	-	-	1,406.016	1,406.016	184.000	-
97	Koira	Khajurdihi PRF	3,634.313	0.202	544.192	3,089.919	792.938	1,973.922	-	323.059	-	3,089.919	3,089.919	80.940	-
98	Koira	Bhabanipah ad PRF	1,290.313	4.423	64.347	1,221.543	-	1,221.543	-	-	-	1,221.543	1,221.543	315.000	-
99	Koira	Toda - I PRF	47.063	-	-	47.063	-	-	47.063	-	-	47.063	47.063	-	-
100	Koira	Toda - II PRF	90.938	-	-	90.938	-	-	90.938	-	-	90.938	90.938	-	-
101	Koira	Toda PRF Part-V	4.856	-	-	4.856	-	-	-	4.856	-	4.856	4.856	-	-
102	Koira	Kathmala PRF	213.678	-	91.383	122.295	-	122.295	-	-	-	122.295	122.295	101.170	-
103	Koira	Mendhamar uni - I PRF	472.937	-	1.055	471.882	-	471.882	-	-	-	471.882	471.882	-	-
104	Koira	Gonua PRF	352.375	0.340	-	352.035	-	352.035	-	-	-	352.035	352.035	-	-
105	Koira	Mendhamar uni – II PRF	340.875	-	-	340.875	-	200.000	140.875	-	-	340.875	340.875	-	-
106	Koira	Rakshi PRF	60.313	-	-	60.313	-	60.313	-	-	-	60.313	60.313	-	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
107	Koira	Soyamba PRF	23.957	-	-	23.957	-	23.957	-	-	-	23.957	23.957	23.950	-
108	Koira	Ranisal DPF	140.380	-	-	140.380	-	140.380	-	-	-	140.380	140.380	-	-
109	Koira	Kalmang DPF	80.939	-	-	80.939	-	80.939	-	-	-	80.939	80.939	-	-
110	Koira	Karo DPF	215.702	-	-	215.702	-	215.702	-	-	-	215.702	215.702	-	-
111	Koira	Kaptadihi DPF	30.720	-	-	30.720	-	30.720	-	-	-	30.720	30.720	-	-
Koira Total:-			29,047.417	6.991	2,943.446	26,096.980	18,371.107	4,893.688	948.536	1,883.649	-	26,096.980	26,096.980	1,170.460	-
112	Barsuan	Khandadhar RF	927.560	0.057	52.900	874.603	-	199.757	-	674.846	-	874.603	874.603	-	-
113	Barsuan	Rakshi-II RF	1,472.813	-	16.480	1,456.333	1,456.333	-	-	-	-	1,456.333	1,456.333	113.000	-
114	Barsuan	Sarkunda RF	1,934.625	-	-	1,934.625	1,934.625	-	-	-	-	1,934.625	1,934.625	-	-
115	Barsuan	Sarkunda PRF	4,950.313	0.990	426.662	4,522.661	3,452.050	913.667	-	156.944	-	4,522.661	4,522.661	484.000	-
116	Barsuan / Kuliposh	Khandadhar PRF	1,570.375	0.304	-	1,570.071	-	1,567.141	2.930	-	-	1,570.071	1,570.071	30.000	-
117	Barsuan	Toda PRF Part-III	287.813	-	-	287.813	287.813	-	-	-	-	287.813	287.813	123.000	-
118	Barsuan	Toda PRF Part-IV	186.313	-	19.798	166.515	166.515	-	-	-	-	166.515	166.515	-	-
119	Barsuan	Raikela DPF	390.530	-	-	390.530	-	390.530	-	-	-	390.530	390.530	-	-
120	Barsuan	Tinko DPF	141.744	-	-	141.744	-	141.744	-	-	-	141.744	141.744	112.000	-
121	Barsuan	Toda DPF	240.335	-	-	240.335	-	240.335	-	-	-	240.335	240.335	-	-
Barsuan Total:-			12,102.421	1.351	515.840	11,585.230	7,297.336	3,453.174	2.930	831.790	-	11,585.230	11,585.230	862.000	-
122	Tamra	Dhenkiam RF	6,398.358	0.230	-	6,398.128	5,673.877	-	-	724.251	5,673.877	6,398.128	6,398.128	829.000	-
123	Tamra	Gurundia RF	2,514.282	-	-	2,514.282	2,514.282	-	-	-	2,514.282	2,514.282	2,514.282	367.600	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
124	Tamra	Kusumdihi RF	5,277.124	2.364	-	5,274.760	5,225.261	-	-	49.499	5,225.261	5,274.760	5,274.760	474.000	-
125	Tamra & Jarda	Rushimath RF	6,712.567	0.880	-	6,711.687	6,665.423	-	-	46.264	6,665.423	6,711.687	6,711.687	1,092.000	-
126	Tamra	Rushimath II PRF	138.178	-	-	138.178	138.178	-	-	-	-	138.178	138.178	-	-
127	Tamra	Nalaghati – Rajabasa PRF	678.625	0.520	-	678.105	-	578.105	100.000	-	-	678.105	678.105	104.000	-
128	Tamra	Dhenkiam-I PRF	130.438	-	-	130.438	130.438	-	-	-	-	130.438	130.438	-	-
129	Tamra	Dhenkiam-II PRF	137.000	-	-	137.000	137.000	-	-	-	-	137.000	137.000	-	-
130	Tamra	Gurundia PRF	905.501	-	-	905.501	905.501	-	-	-	905.501	905.501	905.501	40.000	-
131	Tamra	Kusumdihi-I PRF	277.750	-	-	277.750	277.750	-	-	-	-	277.750	277.750	-	-
132	Tamra	Kusumdihi-II PRF	76.875	-	-	76.875	-	76.875	-	-	-	76.875	76.875	17.000	-
133	Tamra	Kusumdihi-III PRF	345.251	-	-	345.251	345.251	-	-	-	345.251	345.251	345.251	-	-
134	Tamra	Rankei DPF	324.795	-	-	324.795	-	324.795	-	-	-	324.795	324.795	-	-
135	Tamra	Gurundia-Badgaon DPF	79.623	-	-	79.623	-	79.623	-	-	-	79.623	79.623	-	-
136	Tamra	Rushimath-I DPF	120.922	-	-	120.922	-	120.922	-	-	-	120.922	120.922	-	-
137	Tamra	Dhenkiam Part-III DPF	47.861	-	-	47.861	-	47.861	-	-	-	47.861	47.861	-	-
138	Tamra	Bhaldunguri VF	5.977	-	-	5.977	-	-	5.977	-	-	5.977	5.977	5.977	-
139	Tamra	Khandapat VF	4.552	-	-	4.552	-	-	4.552	-	-	4.552	4.552	4.552	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
140	Tamra	Mankada Chuan VF	16.187	-	-	16.187	-	-	16.187	-	-	16.187	16.187	16.187	-
141	Tamra	Bartengada VF	4.046	-	-	4.046	-	-	4.046	-	-	4.046	4.046	4.046	-
142	Tamra	Benuam PF	21.040	-	-	21.040	-	-	21.040	-	-	21.040	21.040	-	-
143	Tamra	Bhurung PF	5.000	-	-	5.000	-	-	5.000	-	-	5.000	5.000	-	-
144	Tamra	Madhupur PF	45.587	-	-	45.587	-	-	45.587	-	-	45.587	45.587	-	-
145	Tamra	Tamra (A)PF	15.621	-	-	15.621	-	-	15.621	-	-	15.621	15.621	-	-
146	Tamra	Tamra (B) PF	12.750	-	-	12.750	-	-	12.750	-	-	12.750	12.750	-	-
147	Tamra	Tamra PF	23.422	-	-	23.422	-	-	23.422	-	-	23.422	23.422	-	-
148	Tamra	Tumbei PF	16.798	-	-	16.798	-	-	16.798	-	-	16.798	16.798	-	-
149	Tamra	Madhupur PF	59.437	-	-	59.437	-	-	59.437	-	-	59.437	59.437	-	-
Tamra Total:-			24,395.567	3.994	-	24,391.573	22,012.961	1,228.181	330.417	820.014	21,329.595	24,391.573	24,391.573	2,954.362	-
150	Jarda	Kelo 'A' RF	2,041.978	-	-	2,041.978	2,041.978	-	-	-	2,041.978	2,041.978	2,041.978	333.000	-
151	Jarda	Balia RF	1,435.813	-	-	1,435.813	1,435.813	-	-	-	1,435.813	1,435.813	1,435.813	49.000	-
152	Jarda/ Sole	Majurdima RF	3,339.250	0.486	-	3,338.764	3,338.764	-	-	-	3,338.764	3,338.764	3,338.764	-	-
153	Jarda	Raipiri RF	6,614.326	-	-	6,614.326	6,614.326	-	-	-	6,614.326	6,614.326	6,614.326	370.000	-
154	Jarda	Balia PRF (Part-I)	133.750	-	-	133.750	133.750	-	-	-	-	133.750	133.750	51.000	-
155	Jarda	Balia PRF (Part-II)	280.625	-	-	280.625	274.268	-	6.357	-	-	280.625	280.625	128.000	-
156	Jarda	Kelo PRF	72.375	-	-	72.375	69.462	-	2.913	-	-	72.375	72.375	62.320	-
157	Jarda	Majurdima PRF (Part-'A')	148.500	-	-	148.500	148.500	-	-	-	-	148.500	148.500	-	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
158	Jarda	Majurdima PRF (Part'B')	26.937	0.220	-	26.717	26.110	-	0.607	-	-	26.717	26.717	-	-
159	Jarda	Raipiri PRF (Part-I)	36.312	-	-	36.312	36.312	-	-	-	-	36.312	36.312	-	-
160	Jarda	Raipiri PRF (Part-II)	253.250	-	-	253.250	247.562	-	5.688	-	-	253.250	253.250	253.000	-
161	Jarda	Kunshibahal DPF	33.913	-	-	33.913	-	33.913	-	-	-	33.913	33.913	-	-
162	Jarda	Kello-II DPF	129.988	-	-	129.988	-	129.988	-	-	-	129.988	129.988	4.000	-
163	Jarda	Kello-III DPF	49.170	-	-	49.170	-	49.170	-	-	-	49.170	49.170	-	-
Jarda Total:-			14,596.187	0.706	-	14,595.481	14,366.845	213.071	15.565	-	13,430.881	14,595.481	14,595.481	1,250.320	-
164	Sole	Balai RF	3,416.313	1.260	-	3,415.053	3,294.678	-	-	120.375	3,294.678	3,415.053	3,415.053	602.000	-
165	Sole	Jada RF	1,714.500	-	-	1,714.500	1,714.500	-	-	-	1,714.500	1,714.500	1,714.500	-	-
166	Sole/ Jarda	Kantamunda RF	4,349.688	1.404	-	4,348.284	4,348.284	-	-	-	4,348.284	4,348.284	4,348.284	463.000	-
167	Sole	Kunjar RF	4,924.687	1.708	-	4,922.979	4,589.335	-	-	333.644	4,589.335	4,922.979	4,922.979	110.000	-
168	Sole	Sirigida RF	4,393.563	1.173	-	4,392.390	2,886.916	1,505.474	-	-	4,392.390	4,392.390	4,392.390	-	-
169	Sole	Suluguda RF	2,730.068	-	-	2,730.068	2,505.208	-	-	224.860	2,505.208	2,730.068	2,730.068	10.000	-
170	Sole	Jada PRF	105.544	-	-	105.544	105.544	-	-	-	-	105.544	105.544	-	-
171	Sole	Balai PRF	88.500	-	-	88.500	88.500	-	-	-	88.500	88.500	88.500	-	-
172	Sole	Kantamunda -I PRF (Part1I)	289.500	-	-	289.500	289.500	-	-	-	289.500	289.500	289.500	50.000	-
173	Sole	Kantamunda -I PRF (Part-II)	229.750	-	-	229.750	229.750	-	-	-	229.750	229.750	229.750	-	-
174	Sole	Kantamunda -II PRF	84.938	-	-	84.938	84.938	-	-	-	-	84.938	84.938	-	-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
175	Sole	Mahuldihi PRF (Part-I)	316.687	-	-	316.687	316.687	-	-	-	316.687	316.687	316.687	-	-
176	Sole	Mahuldihi PRF (Part-II)	227.812	-	-	227.812	227.812	-	-	-	-	227.812	227.812	-	-
177	Sole	Sirigida PRF	73.312	-	-	73.312	73.312	-	-	-	73.312	73.312	73.312	-	-
178	Sole	Sulguda PRF	62.812	-	-	62.812	62.812	-	-	-	62.812	62.812	62.812	-	-
Sole Total:-			23,007.674	5.545	-	23,002.129	20,817.776	1,505.474	-	678.879	21,904.956	23,002.129	23,002.129	1,235.000	-
Total:-			141,334.418	20.232	4,031.584	137,282.602	105,558.787	20,325.275	3,839.840	7,558.700	65,082.505	137,282.602	137,282.602	14,135.968	-
Un-classed Forests :-			61.731	-	-	61.731	-	-	-	-	-	-	-	-	61.731
G. Total of Bonai Division			141,396.149	20.232	4,031.584	137,344.333	105,558.787	20,325.275	3,839.840	7,558.700	65,082.505	137,282.602	137,282.602	14,135.968	61.731

N.B.- The DPF areas (to be notified U/s -4 of OFA, 1972) covering an area of 5,849.793 ha. (25 Nos.) have been included in the Working Plan for the first time for its management. The Proposals are under process at different levels for reservation by Government. The final area will be subject to final notification U/s-4 of OFA, 1972.

Table No.1.3.10.2 Details of RF and PRF area diverted under F.C. Act, 1980 and F.R. Act, 2006.							
Sl. No.	Name of RF/ PRF	Compt. No.	Total area of the Compt. In Ha.	Area diverted in Ha. for			
				Mining Purpose	Other than mining (Irrigation road etc.)	FRA	Total area (5+6+7)
1	Kendrikela RF	Entire	196.276	-	0.817	0.368	1.185
2	Baghiakucha RF	Entire	74.464	-	1.101	-	1.101
3	Mahulpada RF	8 (b)	321.998	-	-	0.600	0.600
4	Kathmal RF	Entire	101.174	90.583	0.505	-	91.088
5	Bhabanipahar RF	Entire	370.295	4.075	-	0.438	4.513
6	Toda RF	1	260.000	180.948	-	-	
		2 (b)	142.438	5.737	-	-	
		3	406.312	163.912	-	-	
		4	274.813	76.883	-	-	
		12 (b)	184.501	-	-	0.556	
		13	486.875	-	7.349	-	
		25 (b)	130.062	102.342	3.887	-	
		26 (b)	241.250	66.139	-	-	
		27	216.687	176.098	2.398	-	
		28 (a)	228.813	24.650	-	-	
		28 (b)	138.937	136.717	-	-	
		29 (b)	259.375	145.470	-	-	
		33 (b)	134.063	-	11.886	-	
		39 (b)	60.562	16.991	-	-	
		40 (b)	119.000	45.564	-	-	
		41(a)	346.250	45.626	-	-	
		41 (b)	168.187	150.319	-	-	
		42 (a)	200.000	63.635	-	-	
		42 (b)	147.187	144.043	-	-	
		43 (b)	184.312	98.957	-	-	
		44 (b)	86.125	46.992	-	-	
		45 (b)	142.750	44.964	-	-	
		47 (b)	175.000	0.000	-	0.600	
		48	203.312	29.933	-	-	
		49 (a)	129.438	15.787	-	-	
		49 (a)	99.437	99.437	-	-	
		50 (b)	121.500	85.019	-	-	
		51 (a)	149.250	11.748	-	-	
		51 (b)	144.125	131.260	-	-	
		Total:-	5580.561	2109.171	25.520	1.156	2135.847
7	Karo RF	1	501.204	-	5.225	-	
		3	433.907	2.880	-	0.432	
		4	230.242	4.510	-	-	
		Total:-	1165.353	7.390	5.225	0.432	13.047
8	Khandadhar RF	Entire	927.560	52.900	-	0.057	52.957
9	Rakshi-II RF	1	648.233	-	16.480	-	16.480
10	Rushimath RF	11 (b)	415.518	-	-	0.880	0.880
11	Dhenkiam RF	17 (a)	141.750	-	-	0.130	
		21 (a)	108.812	-	-	0.100	
		Total:-	250.562	-	-	0.230	0.230
12	Kusumdihi RF	9 (b)	569.988	-	-	0.584	
		16	283.088	-	-	1.780	
		Total:-	853.076	-	-	2.364	2.364

Sl. No.	Name of RF/ PRF	Compt. No.	Total area of the Compt. In Ha.	Area diverted in Ha. for			
				Mining Purpose	Other than mining (Irrigation road etc.)	FRA	Total area (5+6+7)
13	Majurdima RF	6	641.971	-	-	0.486	0.486
14	Balai RF	1	441.573	-	-	0.960	1.260
		9	424.859	-	-	0.300	
		Total:-	866.432	-	-	1.260	
15	Kantamunda RF	1	229.393	-	-	0.464	1.404
		8	447.573	-	-	0.940	
		Total:-	676.966	-	-	1.404	
16	Kunjar RF	11	272.359	-	-	0.728	1.708
		12	426.237	-	-	0.980	
		Total:-	698.596	-	-	1.708	
17	Sirgida RF	12	239.455	-	-	0.440	1.173
		14	280.447	-	-	0.733	
		Total:-	519.902	-	-	1.173	
G.Total of RF :-			14308.937	2264.119	49.648	12.556	2326.323
18	Nagaria PRF	3 (b)	545.125	188.350	-	0.677	571.057
		4 (b)	271.937	55.610	-	-	
		5 (b)	401.062	281.280	-	-	
		13 (b)	388.687	45.140	-	-	
		Total:-	1606.811	570.380	-	0.677	
19	Khajurdihi PRF	1 (b)	494.914	8.455	-	-	544.394
		2 (b)	320.905	-	-	0.202	
		3 (b)	560.045	113.032	-	-	
		4	547.339	224.212	-	-	
		6 (b)	320.218	6.124	-	-	
		7 (a)	224.468	135.370	-	-	
		7 (b)	120.255	56.999	-	-	
		Total:-	2588.144	544.192	-	0.202	
20	Bhabanipahar PRF	Entire	1290.313	64.347	-	4.423	68.770
21	Kathmal PRF	Entire	213.678	91.383	-	-	91.383
22	Mendhamaruni-I PRF	Entire	472.937	1.055	-	-	1.055
23	Gonua PRF	Entire	352.375	-	-	0.340	0.340
24	Sarkunda PRF	8 (c)	61.250	10.147	-	-	427.652
		9	346.400	48.827	-	-	
		10	275.671	179.721	-	-	
		11 (a)	183.173	71.074	-	-	
		11 (b)	148.549	56.933	-	0.404	
		12 (a)	36.713	-	-	0.250	
		12 (b)	274.168	-	-	0.200	
		13 (b)	526.533	59.960	-	0.136	
		Total:-	1852.457	426.662	-	0.990	
25	Khandadhar PRF	Entire	1570.375	-	-	0.304	0.304
26	Toda PRF, Part-IV	Entire	186.313	19.798	-	-	19.798
27	Nalaghati-Rajabasa PRF	Entire	678.625	-	-	0.520	0.520
28	Majurdima PRF	Entire	175.437	-	-	0.220	0.220
G.Total of PRF :-			10987.465	1717.817	-	7.676	1725.493
G.Total of RF & PRF :-			25296.402	3981.936	49.648	20.232	4051.816

CHAPTER – 2

SELECTION WORKING CIRCLE

2.1 Selection Working Circle: This Working Circle has been prescribed for sustainable harvesting of exploitable trees with activities to improve forest growth and crop quality. This Working Circle has been clearly marked in the Management Maps (1:50,000 scale).

2.2. General Constitution of Working Circle: Forest Blocks coming under the Selection Working Circle in the previous Revised Working Plan i.e., 1,08,417.025 ha. for the period from 1997-98 to 2016-17 have brought under this Working Circle. Apart from this, the newly created Jada PRF (105.544 Ha.) and Rushimath-II PRF (138.178 Ha.) i.e. total of 243.722 ha have also been included for the first time for working and the total area comes to 1,08,660.747 ha. But this working circle will cover an area of 105558.787 ha. excluding the diverted forest areas of 3,086.395 ha. under F.C.Act, 1980 and F.R.A., 2006. Besides, an area of 15.565 ha. (Raipiri-II PRF 5.688 ha. + Balia-II PRF 6.357 ha. + Kello PRF 2.913 ha. + Majurdima-B PRF 0.607 ha.) are now found under encroachment. Thus, the said area has also been deducted from Selection Working Circle and assigned to Plantation Working Circle. Areas allotted to this Working Circle are given in **Table No.2.2.1**

Table No.2.2.1 Allotment of areas to Selection Working Circle:						
Sl. No.	Name of Range	Name of Forest blocks	Area in ha. as per Govt. Notification	Computed area in ha. taken for Management	Compartment & Sub-Compartment	Total area of SWC in Ha.
1	2	3	4	5	6	7
1	Bonai	Budhapahar RF	1041.278	1071.750	1, 2, 3 & 4(b)	1064.465
2	Bonai	Dandapat East RF	416.997	409.500	1 & 2	409.500
3	Bonai	Dandapat West RF	2338.972	2294.063	1, 2, 3, 4, 5 & 6	2294.063
4	Bonai	Sinduria RF	1144.880	1144.881	1(b), 2, 3, 4, & 5	1034.157
5	Bonai/ Jarda	Ulsura RF	1420.477	1400.061	1(b), 1(c), 3(b), 3(c), 4(b), 5, 6(b), 6(c), 7, 8(a), & 8(b)	1387.192

6	Bonai	Bandhabhuin-Bhadimara PRF	564.346	851.125	Entire	851.125
7	Bonai	Budhapahar 'B' PRF-Part-I	291.380	273.438	Entire	273.438
8	Bonai	Budhapahar 'B' PRF-Part-II	125.453	119.063	Entire	119.063
9	Kuliposh/ Barsuan	Amrudhi RF	2440.416	2408.620	1(b), 2(b), 3(b), 4(b), 5(b), 7(b), 8(b), 9(b)	1374.119
10	Kuliposh	Lunga RF	5284.176	5242.146	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 & 25	5242.146
11	Kuliposh	Mahulpada RF	4734.925	4565.000	1(b), 2(b), 3(b), 4(b), 5(b), 6(b), 7, 8(b), 9(b) & 10(b)	3402.550
12	Kuliposh	Lunga PRF	283.286	257.063	Entire	257.063
13	Kuliposh/ Barsuan	Nagaria PRF	7709.429	9684.811	2(b), 3(b), 4(b), 5(b), 6(b), 7(b), 9(b), 10(b), 11(b), 12(b), 13(b), 14, & 15(b)	4983.881
14	Jarda	Balia RF	1499.797	1435.813	1, 2, 3 & 4	1435.813
15	Jarda	Kelo 'A' RF	1872.521	2041.978	1, 2, 3, 4 & 5	2041.978
16	Jarda	Majurdima RF	3294.617	3339.250	1, 2, 3, 4, 5, 6, 7 & 8	3338.764
17	Jarda	Raipiri RF	6617.563	6614.326	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 & 18	6614.326
18	Jarda	Balia PRF (Part-I)	170.254	133.750	Entire	133.750
19	Jarda	Balia PRF (Part-II)	358.155	280.625	Part	274.268
20	Jarda	Kelo PRF	62.322	72.375	Part	69.462
21	Jarda	Majurdima PRF (Part-'A')	160.420	148.500	Entire	148.500
22	Jarda	Majurdima PRF (Part 'B')	-	26.937	Part	26.110
23	Jarda	Raipiri PRF (Part-I)	323.269	36.312	Entire	36.312
24	Jarda	Raipiri PRF (Part-II)	-	253.250	Part	247.562
25	Sole	Balai RF	3466.693	3416.313	1, 2, 3, 4, 5, 6, 7(b), 8(b) & 9	3294.678
26	Sole	Jada RF	1762.120	1714.500	1, 2, 3, 4, 5 & 6	1714.500

27	Sole/ Jarda	Kantamunda RF	4410.764	4349.688	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11	4348.284
28	Sole	Kunjar RF	4946.985	4924.687	1, 2(b), 3(b), 3(c), 4(b), 5, 6, 7, 8, 9, 10, 11 & 12	4589.335
29	Sole	Sirigida RF	4538.648	4393.563	1, 2(b), 6(b), 7, 8, 9, 10(b), 11, 12, 13 & 14	2886.916
30	Sole	Suluguda RF	2730.068	2730.068	1, 2, 3, 4(b), 4(c), 5(a), 5(b), 6(b), 7(b) & 8	2505.208
31	Sole	Balai PRF	79.384	88.500	Entire	88.500
32	Sole	Kantamunda-I PRF (Part-I)	474.463	289.500	Entire	289.500
33	Sole	Kantamunda-I PRF (Part-II)	-	229.750	Entire	229.750
34	Sole	Kantamunda-II PRF	129.502	84.938	Entire	84.938
35	Sole	Mahuldihi PRF (Part-I)	287.332	316.687	Entire	316.687
36	Sole	Mahuldihi PRF (Part-II)	234.723	227.812	Entire	227.812
37	Sole	Sirigida PRF	55.685	73.312	Entire	73.312
38	Sole	Sulguda PRF	62.614	62.812	Entire	62.812
39	Sole	Jada PRF	105.544	105.544 Not included in previous plan	Entire	105.544
40	Koira	Karo RF	1350.708	1419.063	1, 2, 3 & 4	1406.016
41	Koira/ Barsuan	Khajurdihi RF	2125.617	2144.312	1, 2, 3, 4, 5, 6, 7 & 8	2144.312
42	Koira	Mendhamarini RF	546.337	512.937	2 & 3	287.750
43	Koira	Rakshi-I RF	1745.884	1796.289	1, 2, 3, 4(b), 5 & 6	1157.834
44	Koira	Kathmal RF	101.173	101.174	Part	10.086

45	Koira/ Barsuan	Toda RF	15722.869	15703.988	1, 2(b), 3, 4, 5, 6, 7, 8(b), 9, 10(a), 10(b), 11(b), 12(b), 13, 14(a), 14(b), 15(a), 16, 17(b), 18, 19, 20, 21, 22, 23, 24, 25(a), 25(b), 26(a), 26(b), 27, 28(a), 28(b), 29(b), 30(a), 31(a), 31(b), 32, 33(a), 33(b), 34, 35, 36, 37, 38(a), 38(b), 39(a), 39(b), 39(c), 40(a), 40(b), 41(a), 41(b), 42(a), 42(b), 43(a), 43(b), 44(a), 44(b), 45(a), 45(b), 46(a), 47(a), 48, 49(a), 49(b), 50(a), 50(b), 51(a), 51(b)	12572.171
46	Koira	Khajurdihi PRF	3474.301	3634.313	6(b), 7(b) & 8	792.938
47	Barsuan	Rakshi-II RF	1412.788	1472.813	1, 2, 3, 4 & 5	1456.333
48	Barsuan	Sarkunda RF	1888.870	1934.625	1, 2, 3, 4, 5 & 6	1934.625
49	Barsuan	Sarkunda PRF	6434.641	4950.313	1, 2, 4, 5, 6(b), 7(b), 8(b), 9, 11(b), 12(b), & 13(b)	3452.050
50	Barsuan	Toda III PRF	225.820	287.813	Entire	287.813
51	Barsuan	Toda IV PRF	139.619	186.313	Part	166.515
52	Tamra	Dhenkiam RF	6553.233	6398.358	1, 2, 3(b), 4, 5(b), 6(b), 7(b), 8(b), 9, 10, 11, 12, 13, 14, 15, 16(b), 17(b), 18(b), 18(c), 19(a), 19(b), 20(b) & 21(b)	5673.877
53	Tamra	Gurundia RF	2531.606	2514.282	1, 2, 3, 4, 5, 6 & 7	2514.282
54	Tamra	Kusumdihi RF	5445.973	5277.124	1, 2, 3, 4, 5, 6, 7, 8, 9 (b), 10, 11 (b), 12, 13, 14, 15, 16 & 17	5225.261
55	Tamra/ Jarda	Rushimath RF	6741.533	6712.567	1, 2, 3, 4, 5, 6, 7(b), 8(b), 9, 10, 11(b), 12(b), 13, 14, 15 & 16	6665.423
56	Tamra	Dhenkiam-I PRF	117.159	130.438	Entire	130.438

57	Tamra	Dhenkiam-II PRF	195.224	137.000	Entire	137.000
58	Tamra	Gurundia PRF	1498.280	905.501	Entire	905.501
59	Tamra	Kusumdihi-I PRF	246.118	277.750	Entire	277.750
60	Tamra	Kusumdihi-III PRF	396.843	345.251	Entire	345.251
61	Tamra	Rushimath II PRF	138.178	138.178 Not included in previous plan	Entire	138.178
		Total area	124472.234	124092.713		105558.787

2.3 General Characteristics of vegetation:-

2.3.1 Forests allotted to this working circle fall mainly under moist peninsular and dry peninsular Sal forests. There is a distinct difference between types of Sal forests of East Bonai and West Bonai. This is probably due to soil factor and due to difference in rain fall. Considerable forest area of East Bonai, especially Toda, Karo, Sarkunda and Lunga RF blocks contains good quality of Sal . Q.II Sal finds its occurrence in the valleys and low lying areas having deep loamy soil while hill slopes are mostly covered with Q.III Sal. The Reserved Forest blocks of West Bonai are covered with poorer type of Sal forests conforming to Q.IV and Q V. However, some valleys and moist pockets of RF blocks of Kunjar, Majurdima, Kantamunda and Raipiri contain Q.II and Q III Sal forests. In both East & West Bonai, the Quality of crop is much inferior in northern half especially in Rakshi RF blocks in East Bonai and Rushimath, Gurundia and Dhenkiam RF blocks in West Bonai. In these parts, trees are not capable of growing to big sizes and unsoundness develops at an early age.

2.3.2 The high level moist peninsular Sal forest finds its occurrence in the upper slopes, ridges and flat top of hills of Toda, Lunga, Khajurdihi, Sarkunda and Karo RF blocks. These areas are containing mostly laterite and crystalline type of rocks. Here the quality of Sal is usually IV and crop is somewhat open. Sal is the dominant species in these localities. Here the regeneration is adequate but fire hazard is a limiting factor for the establishment of seedlings. The common associates of Sal are *Terminalia tomentosa*, *Anogeissus latifolia*, *Syzygium cumini* etc.

2.3.3 The low level moist peninsular Sal forests find its occurrence in lower hill slopes of Toda, Karo, Sarkunda and Kathmal RF blocks in East Bonai. It is also available in the Southern portions of West Bonai particularly in the moist valleys. The soil in these localities is deep loam or alluvium. Sal is the dominant species in these localities. The canopy is usually covered and regeneration is good. Due to occurrence of annual fire and severe biotic pressure, the establishment of seedlings is found to be poor. In general the quality of Sal is III.

2.3.4 The moist peninsular valley type Sal forest is prominent in the moist valleys having deep loam soil of Toda, Sarkunda, Karo and Lunga blocks. Here, the growth of Sal is quite good attaining Q-III in general and Q-II in favourable localities. The regeneration is excellent but establishment of seedlings is poor due to biotic interference and fire hazards. The stocking of crop is quite good and Sal is the dominant species.

2.3.5 The dry peninsular Sal forest occurs in almost all forest blocks of West Bonai. It also finds its occurrence in northern portion of East Bonai, Particularly in the RF blocks of Rakshi, Mendhamarini and Amrudhi. Soil in these localities is derived usually from crystalline and metamorphic type of rocks and is shallow in nature. Sal is the dominant species in these localities and its quality varies from IV to V. Regeneration of Sal is fairly well. Here, common associates of Sal are mainly *Terminalia tomentosa*, *Pterocarpus marsupium*, *Adina cordifolia*, *Terminalia chebula*, *Zyzyphus xylocarpa*, *Buchanania lanzan*, etc.

2.3.6 PRF blocks of Kantamunda-I (Part-II) Kello and Majurdima are having mostly Quartz schist and Quartzite type of rocks and sandy loam soil. Here, the growth of Sal forest is quite good and Sal is the dominant species in these localities. The lower hill slopes and low lying areas are covered with quality-III Sal while the upper slopes, ridges and hill tops are having Sal forests conforming to Q-IV. The canopy is usually full and regeneration is adequate.

2.3.7 PRF blocks, Balia, Kantamunda-II, Raipiri and Kusumdihi-III are having gentle to moderate slopes, while PRF blocks Nagaria and Sarkunda are having mostly hilly type of terrain with moderate to steep slope. Quality-IV Sal finds its occurrence while few low

lying areas, moist valleys and lower slopes are having quality-III sal. The canopy is usually covered and regeneration is adequate, but fire hazard is a limiting factor for the establishment of seedlings. Quite a few pockets of PRF blocks, Khajurdihi, Sarkunda and Nagaria which had been subjected to podu cultivation in the past are covered with poor miscellaneous type of forests.

2.3.8. PRF blocks Bandhabhuin-Bhadimara, Budhapahad, Lunga, Soluguda and Toda are having gentle to moderate slopes while PRF blocks, Balai and Khajurdihi are having fairly steep gradient. Here, Sal is the dominant species in these localities. Quality IV sal finds its occurrence in low lying areas and in the moderate slopes while the upper slopes, ridges and hill tops are covered with dry miscellaneous forests.

2.3.9. The PRF blocks, Kantamunda-I (Part-I) Mohuldihi, Sirigida, Dhenkiam, Kusumdihi-I and Gurundia are having mostly hilly area with precipitous slopes and are containing primarily Quartzschists, Quarzite and Quartz rocks and sandy loam soil. The occurrence of Sal in these localities is very less. Here most of the upper slopes, ridges and hill tops are covered with good dry miscellaneous forest while Quality-IV Sal is confined to few valleys, low lying areas and lower slopes.

2.3.10. Bamboo occurs extensively in the forests of west Bonai but it is practically absent in the East Bonai. Among the bamboo species, *Dendrocalamus strictus* (Salia bamboo) is the most important species available in most of the RF and PRF blocks of west Bonai, particularly in the upper hill slopes where the soil is too shallow to allow the growth of other species. In Mohulpada RF blocks, Salia bamboo has come up as pure crop in the blanks created due to continuous podu cultivation in the past but its quality is not good as culms are thin and short and clumps are small in size.

2.4. Felling Series: 20 nos of felling series have been constituted in 7 Forest Ranges of this Division. Each felling series has been further divided into 10 nos of annual coupes. Forest Blocks coming under different Felling Series are shown in the following **Table No.2.4.1.**

Table 2.4.1. Forest Blocks coming under different Felling Series

Sl.No	Name of Range	Name of Felling Series	Name of the forest blocks	Compartment & Sub-Compartment	Area under SIWC in ha.	Area of felling series in ha.
1	2	3	4	5	6	7
1	Kuliposh/ Barsuan	Amrudi	Amrudi RF	1(b), 2(b), 3(b), 4(b), 5(b), 7(b), 8(b), 9(b)	1374.119	4776.669
			Mahulpada RF	1(b), 2(b), 3(b), 4(b), 5(b), 6(b), 7, 8(b)(part), 9(b), & 10(b)	3402.550	
2	Bonai	Dandapat	Dandapat (East) RF	1 & 2	409.500	2703.563
			Dandapat (West) RF	1, 2, 3, 4, 5 & 6	2294.063	
3	Kuliposh	Lunga	Lunga RF	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, & 25	5242.146	5499.209
			Lunga PRF	Entire	257.063	
4	Kuliposh/ Barsuan/ Bonai/ Kuliposh	Nagaria	Nagaria PRF	2(b), 3(b)(part), 4(b) (part), 5(b) (part), 6(b), 7(b), 9(b), 10(b), 11(b), 12(b), 13(b) (part), 14 & 15(b)	4983.881	6227.507
			Bhandhabhuni- Bhadimara	Entire	851.125	
			Budhapahad 'B' PRF	Entire	273.438	
			Budhapahad 'B' PRF (Part-	Entire	119.063	
5	Bonai/ Jarda	Ulsura	Ulsura RF	1(b), 1(c), 3(b), 3(c), 4(b), 5, 6(b), 6(c), 7, 8(a) & 8(b)	1387.192	3485.814
			Budhapahad RF	1, 2, 3, & 4(b)	1064.465	
			Sinduria RF	1(b), 2, 3, 4 & 5	1034.157	

6	Sole	Jada	Jada RF	1, 2, 3, 4, 5 & 6	1714.500	8216.116
			Balai RF	1, 2, 3, 4, 5, 6, 7(b), 8(b) & 9	3294.678	
			Sulguda RF	1, 2, 3, 4(b), 4(c), 5(a), 5(b), 6(b), 7(b) & 8	2505.208	
			Balai PRF	Entire	88.500	
			Mahuldihi PRF (Part-I)	Entire	316.687	
			Mahuldihi PRF (Part-II)	(Part)	128.187	
			Jada PRF	Entire	105.544	
			Sulguda PRF	Entire	62.812	
7	Sole	Kunjar	Kunjar RF	1, 2(b), 3(b), 3(c), 4(b), 5, 6, 7, 8, 9, 10, 11 & 12	4589.335	8688.949
			Kantamunda RF	3, 4, 5, 6, 7, 8, 9, 10 & 11	3780.200	
			Kantamunda PRF-I (Part-II)	(Part)	134.851	
			Kantamunda PRF-II	Entire	84.938	
			Mahuldihi PRF (Part-II)	(Balance)	99.625	
8	Jarda	Majurdima	Majurdima RF	1, 2, 3, 4, 5, 6, 7 & 8	3338.764	6524.290
	Sole		Kantamunda RF	1 & 2	568.084	
	Jarda		Kelo 'A' RF	1, 2, 3, 4 & 5	2041.978	
	Sole		Kantamunda PRF-(Part-I)	Entire	289.500	
	Sole		Kantamunda PRF-(Part-II)	(Balance)	94.899	
	Jarda		Kelo PRF	(Part)	16.455	
	Jarda		Majurdima PRF (Part-'A')	Entire	148.500	
	Jarda		Majurdima PRF (Part-'B')	Part	26.110	

9	Jarda	Raipiri	Raipiri RF	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 & 18	6614.326	8795.038
			Balia RF	1, 2, 3 & 4	1435.813	
			Balia PRF (Part-I)	Entire	133.750	
			Balia PRF (Part-II)	Part	274.268	
			Kelo PRF	(Balance)	53.007	
			Raipiri PRF (Part-I)	Entire	36.312	
			Raipiri PRF (Part-II)	Part	247.562	
10	Sole	Sirigida	Sirigida RF	1, 2(b), 6(b), 7, 8, 9, 10(b), 11, 12, 13 & 14	2886.916	2960.228
			Sirigida PRF	Entire	73.312	
11	Koira	Karo	Karo RF	1, 2, 3 & 4	1406.016	2965.191
			Kathmal RF	Part	10.086	
			Mendhamaru ni RF	2 & 3	287.750	
			Toda RF	23, 24, 25(a), 26(a), 49(a) & 50(a)	1261.339	
12	Barsuan	Khajurdihi	Khajurdihi RF	1, 2, 3, 4, 5, 6, 7 & 8	2144.312	2144.312
13	Koira/ Barsuan	Rakshi	Rakshi-I RF	1, 2, 3, 4(b), 5 & 6	1157.834	2614.167
			Rakshi-II RF	1, 2, 3, 4 & 5	1456.333	

14	Barsuan/ Koirā	Sarkunda	Sarkunda RF	1, 2, 3, 4, 5 & 6	1934.625	4137.962
			Toda RF	4, 6, 7, 8(b), 9, 10(a), 28(a), 32, 41(a), 42(a) & 51(a)	2203.337	
15	Koirā/ Barsuan	Tensa	Toda RF	1, 2(b), 3, 5, 10(b), 11(b), 12(b), 14(b), 17(b), 18, 19, 25(b), 26(b), 27, 28(b), 29(b), 31(b), 33(b), 35, 36, 37, 38(b), 39(b), 39(c), 40(b), 41(b), 42(b), 43(b), 44(b), 45(b), 49(b), 50(b), & 51(b)	4487.217	4487.217
16	Koirā/ Barsuan	Toda	Toda RF	13, 14(a), 15(a), 16, 20, 21, 22, 30(a), 31(a), 33(a), 34, 38(a), 39(a), 40(a), 43(a), 44(a), 45(a), 46(a), 47(a), & 48	4620.278	4620.278
17	Barsuan	Sarkunda PRF	Sarkunda PRF	1, 2, 4, 5, 6(b), 7(b), 8(b), 9, 11(b), 12(b) & 13(b)	3452.050	4699.316
	Koirā		Khajurdihi PRF	6(b), 7(b) & 8	792.938	
	Barsuan		Toda-III PRF	Entire	287.813	
	Barsuan		Toda-IV PRF	Part	166.515	
18	Tamra	Dhenkiam	Dhenkiam RF	1, 2, 3(b), 4, 5(b), 6(b), 7(b), 8(b), 9, 10, 11, 12, 13, 14, 15, 16(b), 18(b), 18(c), 19(a), 19(b) & 20(b)	5168.626	5436.064
			Dhenkiam PRF-I	Entire	130.438	
			Dhenkiam PRF-II	Entire	137.000	

19	Tamra	Kusumdihi	Kusumdihi RF	1, 2, 3, 4, 5, 6, 7, 8, 9(b), 10, 11(b), 12, 13, 14, 15, 16 & 17	5225.261	6353.513
			Dhenkiam RF	17(b) & 21(b)	505.251	
			Kusumdihi PRF-I	Entire	277.750	
			Kusumdihi PRF-III	Entire	345.251	
20	Tamra/ Jarda	Rushimat h	Rushimath RF	1, 2, 3, 4, 5, 6, 7(b), 8(b), 9, 10, 11(b), 12(b), 13, 14, 15 & 16	6665.423	10223.384
			Gurundia RF	1, 2, 3, 4, 5, 6 & 7	2514.282	
			Gurundia PRF	Entire	905.501	
			Rushimath-II PRF	Entire	138.178	
					105558.787	105558.787

2.5 Blocks, Compartments and JFM Area:

2.5.1. Though DGPS Survey has been completed in most of the Forest Blocks, the compartment areas have not been surveyed. In Government notifications of forest blocks also, extent of compartments and sub-compartments are not available. Hence, areas of all RF & PRF blocks have been taken in this Plan from the computed area of last Revised Working Plan. Most of the RF & PRF blocks do not tally with the corresponding notified areas as maintained in the records of Division office. The notified area of all RF & PRF blocks as maintained in the records of Division office stands as it is. For the purpose of formation of annual coupes, felling series, rehabilitation series etc. the computed areas have been taken into account.

2.5.2 In previous Plan, the compartments of RF blocks have been delineated on the topographical sheets on the basis of conspicuous topographical features; compartments have been formed and delineated in topographical maps only for the PRF blocks Nagaria, Sarkunda & Khajurdihi. In the previous plan, some compartments of few RF blocks were further divided into sub-compartments. This division was done mainly on account of distinct variation of topography within the compartment causing

change in the composition, density and regeneration status of forest vegetation. Apart from this, areas of some compartments which were either under active encroachment or deforested for establishment of tribal colonies and resettlement of displaced people but yet not dereserved were segregated by forming sub-compartments in the previous plan. Also, area of few compartments, where plantations were raised in the past were sub-divided to form sub-compartments. These sub-compartments are retained so that requisite area specific silvicultural and administrative measures can be taken up in due course of time.

2.5.3. Likewise, shifting cultivated areas/ encroached areas of PRF blocks of Nagaria, Sarkunda and Khajurdihi and RF blocks and Mahulpada were made distinct by forming sub-compartments. All the compartment lines of various RF blocks have been demarcated on the ground by giving double rings of white paints on prominent trees at breast height in the visible distances. These compartment and sub-compartment have been shown in the management maps. Forest Blocks, Compartments, Sub-Compartments of this working circle have got allotted to 20 nos of Felling Series and are shown in the Table of Felling in Para.2.6.8.

2.6 Special objectives of management: Special objectives of management are within the scope of general objectives of management and are as follows:

- (a) To improve the density and composition of forest crop as well as stand structure by suitable silvicultural measures.
- (b) To remove matured and silviculturally available trees before they become unsound.
- (c) To carry out silvicultural operations to create conducive situation for better growth of existing crop and natural regeneration.
- (d) To maintain and improve biodiversity of forest blocks.

2.6.1 Analysis of Crop:

2.6.1.1. The entire Working Circle has got surveyed by random stratified sampling method taking sample point of 0.1 ha in different strata of forest. Enumeration of trees, shrubs, herbs and regeneration has been taken up in the sample plots. Sample plot enumeration data has transmitted to NRSC online. NRSC has compiled the enumeration data and submitted the enumeration results. The National Working Plan Code 2014 emphasized that sample point enumeration need to be done in grid based systematic sampling methodology in place of random stratified sampling method for preparation of Forest Resource Inventory. To get the better enumeration result, grids should have been laid by dividing the Survey of India Topo Sheet in grid of 25"x25" longitude and latitude and sample points should have been located on centre of each grid. In the previous Plan of Sri S. C. Pant, IFS, enumeration had carried out by systematic strip sampling method and the blocks had taken as unit for that purpose. The intensity of enumeration was about 1%. In the plan prior to previous Plan, enumeration intensity was about 4%. But in the present Plan, the enumeration intensity is 0.065%. Hence, Accuracy of estimation may be less compared to estimation in the previous Plans. The NRSC through ORSAC has provided the sample plots on random stratified sampling method. Enumeration results in respect of only four species have been supplied and all other species have been catagorised as miscellaneous. Further, the enumeration results have been provided in respect of Forest Blocks and Compartments.

2.6.1.2 From the enumeration results provided by NRSC through ORSAC in Stratified Random Sampling methodology at the time of preparation of this Revised Working Plan, it is found that the number of tree species above 30 cm girth in different girth class in respect of Dhaura (*Anogeissus latifolia*), Kendu (*Diospyros melanoxylon*), Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*) and all other species have been categorized as miscellaneous species. The no of these species in different girth class and the percentage of Sal in various blocks included in the Selection Working Circle is furnished in the following **Table No.2.6.1.1**

Table No.2.6.1.1. Tree Species under different girth class along with percentage of Sal in various forest blocks of Selection Working Circle.									
SL NO.	BLOCK	SPECIES	Girth Classes						% of Sal
			30-60	60-90	90-120	120-150	>150	Total	
1	BUDHAPAHAD RF	Ano lat	14221	8408	4477	1950	803	29861	37.90
		Dio mel	15204	8715	4945	2209	864	31938	
		Misc	130619	72967	30339	8591	8094	250613	
		Sho rob	63775	58101	40587	19699	12064	194226	
		Ter tom	2356	1783	1123	361	182	5804	
2	DANDPAT (EAST BLOCK) RF	Ano lat	2943	1695	709	337	122	5805	41.82
		Dio mel	2817	1652	740	366	49	5625	
		Misc	27837	12369	5410	2265	1513	49393	
		Sho rob	16913	12979	8938	3338	2359	44527	
		Ter tom	454	392	194	64	26	1132	
3	DANDPAT (WEST BLOCK) RF	Ano lat	18495	11186	6023	2380	1187	39267	41.5368
		Dio mel	17211	11225	6166	2760	1221	38589	
		Misc	166690	84959	40056	13580	10917	316207	
		Sho rob	94103	85601	61225	25612	18743	285282	
		Ter tom	3231	2216	1190	572	273	7478	
4	SINDURIA RF	Ano lat	8781	5261	2828	1120	565	18553	40.77
		Dio mel	8160	5449	2914	1321	568	18412	
		Misc	80636	40590	19262	6389	5384	152262	
		Sho rob	43943	39938	28459	11652	8624	132620	
		Ter tom	1457	1019	557	247	145	3427	
5	ULSURA RF	Ano lat	10053	6018	3555	1234	843	21704	37.88
		Dio mel	9173	6081	3340	1366	630	20593	
		Misc	96516	48607	23046	7189	6197	181559	
		Sho rob	45206	41895	30085	12442	8963	138590	
		Ter tom	1529	997	491	236	151	3400	

6	BANADABHUIN BHARIM PRF	Ano lat	3899	2341	1343	460	267	8310	31.64
		Dio mel	3256	2135	1303	474	228	7396	
		Misc	34088	16143	7809	1906	2398	62344	
		Sho rob	15691	10106	6242	2572	1916	36526	
		Ter tom	408	174	103	68	100	852	
7	BUDHAPAHAD- B- PRF part-I	Ano lat	1547	905	470	185	92	3200	40.42
		Dio mel	1477	974	500	222	90	3262	
		Misc	14583	7255	3369	1111	946	27264	
		Sho rob	7652	6977	5049	2040	1576	23294	
		Ter tom	254	183	103	48	27	615	
8	BUDHAPAHAD- B- PRF part-II	Ano lat	665	389	202	80	40	1376	40.41
		Dio mel	635	419	215	95	39	1403	
		Misc	6271	3120	1449	478	407	11724	
		Sho rob	3290	3000	2171	877	678	10016	
		Ter tom	109	79	44	21	12	264	
9	AMRUDI RF	Ano lat	13085	7624	4049	1459	746	26963	37.24
		Dio mel	12183	7468	4090	1688	652	26081	
		Misc	118880	58182	26358	8147	6949	218510	
		Sho rob	58652	47245	33501	14043	10328	163770	
		Ter tom	1961	1223	595	407	210	4398	

10	LUNGA RF	Ano lat	54264	31619	22413	9269	4276	121835	38.47
		Dio mel	47532	29250	15168	7453	2527	101931	
		Misc	515606	254943	116641	42849	29691	959729	
		Sho rob	262876	218992	154470	64583	52899	753825	
		Ter tom	9306	6233	3148	2850	747	22286	
11	MAHULPADA RF	Ano lat	24742	11492	7140	2061	1121	46561	34.62
		Dio mel	15774	10571	5418	2652	1074	35485	
		Misc	213649	102700	46339	12302	11880	386872	
		Sho rob	82845	74830	53963	22694	17444	251772	
		Ter tom	2671	1839	1128	525	350	6515	45.95
12	LUNGA PRF	Ano lat	983	618	301	129	67	2097	
		Dio mel	998	593	314	110	54	2068	
		Misc	9248	4701	2117	836	641	17541	
		Sho rob	6074	5547	4064	1718	1478	18881	
		Ter tom	186	161	110	41	10	507	
13	NAGARIA PRF	Ano lat	49693	29036	15022	5863	2926	102542	40.23
		Dio mel	44716	28856	15281	7083	2669	98613	
		Misc	443131	216233	102678	34048	28355	824443	
		Sho rob	244343	208692	146025	59921	43671	702647	
		Ter tom	8030	5123	2865	1404	911	18334	
14	BALIA RF	Ano lat	12613	7965	4982	1794	1316	28671	41.72
		Dio mel	11948	8477	4661	1881	1085	28048	
		Misc	125926	67480	33029	10898	9302	246634	
		Sho rob	63400	68876	50884	21338	16543	221039	
		Ter tom	2200	1681	1004	328	171	5383	
15	KELLO A RF	Ano lat	7615	4643	2136	835	402	15629	42.21
		Dio mel	7757	3675	3508	1000	581	16523	
		Misc	62477	33778	28577	9783	9136	143749	
		Sho rob	36037	30970	35314	15658	12125	130107	
		Ter tom	840	747	397	149	61	2195	

16	MAJURDIMA RF	Ano lat	29348	17528	9612	3496	1756	61738	41.7
		Dio mel	30011	17420	10808	4313	1618	64172	
		Misc	278723	142654	68608	23149	17902	531035	
		Sho rob	149983	147243	105400	46019	31164	479812	
		Ter tom	5367	5254	1898	871	482	13871	
17	RAIPIRI RF	Ano lat	54849	33627	19867	7349	3943	119626	4056
		Dio mel	53004	35565	20156	10967	5031	124721	
		Misc	522712	277713	147847	46398	37300	1031961	
		Sho rob	265683	270336	199243	84705	68052	888013	
		Ter tom	8900	7269	6273	1609	998	25042	
18	BALIA PRF-I	Ano lat	728	480	306	110	82	1706	43.32
		Dio mel	734	500	288	98	70	1690	
		Misc	7426	4138	1966	670	556	14756	
		Sho rob	7417	8057	6076	2639	2198	26387	
		Ter tom	254	215	140	50	13	673	
19	BALIA PRF-I I	Ano lat	1859	1079	593	212	112	3856	37.1
		Dio mel	1804	1138	591	260	97	3889	
		Misc	17818	8874	4001	1266	1007	32965	
		Sho rob	8139	7224	5286	2175	1572	24397	
		Ter tom	282	198	87	56	25	649	
20	KELLO PRF	Ano lat	1088	663	305	119	57	2233	42.21
		Dio mel	1108	525	501	143	83	2360	
		Misc	8925	4825	4082	1398	1305	20536	
		Sho rob	5148	4424	5045	2237	1732	18587	
		Ter tom	120	107	57	21	9	314	
21	MAJURDIMA PRF Part-A	Ano lat	1273	782	427	165	100	2747	45.14
		Dio mel	1144	743	445	180	102	2614	
		Misc	11033	5901	2819	990	764	21506	
		Sho rob	6971	6855	5001	2173	1602	22602	
		Ter tom	276	165	95	50	17	604	

22	MAJURDIMA PRF Part-B	Ano lat	216	133	73	28	17	467	45.14
		Dio mel	194	126	76	31	17	444	
		Misc	1876	1003	479	168	130	3656	
		Sho rob	1185	1165	850	369	272	3842	
		Ter tom	47	28	16	9	3	103	
23	RAIPIRI - I PRF	Ano lat	70	32	20	8	5	135	40.83
		Dio mel	65	29	11	5	7	117	
		Misc	81	40	30	15	6	172	
		Sho rob	148	145	106	46	34	479	
		Ter tom	75	60	19	1	3	158	
24	RAIPIRI - II PRF	Ano lat	437	242	120	40	20	859	40.83
		Dio mel	347	290	190	38	38	903	
		Misc	842	403	145	54	60	1504	
		Sho rob	1037	1020	744	323	238	3362	
		Ter tom	417	195	108	74	28	822	

25	BALAI RF	Ano lat	23912	15526	8711	3136	1982	53265	41.15
		Dio mel	23183	16498	9736	5386	1992	56794	
		Misc	230363	125650	65417	21409	18265	461103	
		Sho rob	123085	121363	89903	40773	30969	406096	
		Ter tom	3888	2920	1806	681	376	9673	
26	JADA RF	Ano lat	15115	9215	5143	1934	1132	32538	41.03
		Dio mel	14461	9183	4841	2088	883	31456	
		Misc	142983	72567	34133	11859	9213	270754	
		Sho rob	76307	71091	51407	21657	16677	237140	
		Ter tom	2452	1895	1095	450	198	6088	
27	KANTAMUND A RF	Ano lat	33784	20670	11586	4415	2498	72954	41.61
		Dio mel	32288	21219	11482	4908	2342	72240	
		Misc	315953	163788	77611	26110	21434	604897	
		Sho rob	171013	164306	119608	50498	39238	544664	
		Ter tom	5795	4281	2525	1091	505	14194	

28	KUNJAR RF	Ano lat	29464	22001	14718	4041	2572	72801	41.07
		Dio mel	28377	27545	15299	4500	3754	79481	
		Misc	286648	177512	89913	25386	22409	601863	
		Sho rob	145218	169699	129556	51927	38008	534406	
		Ter tom	4984	3754	2382	928	526	12577	38.1
29	SIRIGIRHA RF	Ano lat	39121	23828	14909	5672	3361	86889	
		Dio mel	44923	36179	12624	6031	2907	102666	
		Misc	360580	183174	90307	27142	22410	683614	
		Sho rob	160812	169131	119008	55459	41308	545721	
		Ter tom	5569	3823	2552	999	621	13562	44.12
30	SOLGUDA RF	Ano lat	19271	11757	6954	2620	1487	42084	
		Dio mel	17964	14233	7686	3223	1658	44763	
		Misc	197601	113140	50389	15236	15288	391656	
		Sho rob	113906	125046	87939	31486	25655	384029	
		Ter tom	3246	2260	1398	583	400	7886	43.87

31	BALAI PRF	Ano lat	640	416	248	91	63	1,459	
		Dio mel	656	416	230	80	50	1,432	
		Misc	6,341	3,453	1,624	574	462	12,455	
		Sho rob	3,515	3,691	2,776	1,217	1,044	12,243	
		Ter tom	116	101	70	26	7	319	
32	KANTAMUN DA-I PRF Part-I	Ano lat	1,361	811	439	170	78	2,858	39.64
		Dio mel	1,321	815	399	208	63	2,806	
		Misc	12,590	6,237	2,923	1040	733	23,522	
		Sho rob	6,581	5,788	4,118	1733	1287	19,507	
		Ter tom	197	166	90	40	19	512	
33	KANTAMUN DA-I PRF Part-II	Ano lat	1,750	1,042	564	219	100	3,675	39.64
		Dio mel	1,698	1,048	513	267	81	3,607	
		Misc	16,187	8,019	3,758	1337	942	30,243	
		Sho rob	8,462	7,441	5,295	2228	1655	25,080	
		Ter tom	254	213	116	51	24	659	

34	KANTAMUNDA-II PRF	Ano lat	648	386	209	81	37	1,361	39.64
		Dio mel	629	388	190	99	30	1,336	
		Misc	5,995	2,970	1,392	495	349	11,201	
		Sho rob	3,134	2,756	1,961	825	613	9,289	
		Ter tom	94	79	43	19	9	244	
35	MAHULDIHI-PRF- Part-I	Ano lat	2756	1671	1124	361	202	6114	35.87
		Dio mel	2539	1670	811	514	179	5714	
		Misc	23627	12589	6850	2002	1673	46741	
		Sho rob	9950	9972	6928	3430	2973	33254	
		Ter tom	265	223	223	90	90	891	
36	MAHULDIHI-PRF-Part-II	Ano lat	1790	1077	586	237	110	3801	42.43
		Dio mel	1657	1176	652	303	153	3941	
		Misc	15881	8394	4077	1292	1161	30804	
		Sho rob	9026	8864	6415	2672	2008	28984	
		Ter tom	335	217	126	61	36	776	

37	SIRIGIRHA PRF	Ano lat	750	450	282	97	52	1,632	39.17
		Dio mel	669	434	217	138	46	1,504	
		Misc	6,315	3,302	1,752	572	413	12,354	
		Sho rob	3,168	3,082	2,142	1,001	753	10,144	
		Ter tom	101	72	53	23	19	268	
38	SOLGUDA PRF	Ano lat	570	347	204	81	41	1,243	40.73
		Dio mel	533	405	220	105	55	1,319	
		Misc	5,353	2,864	1,415	428	406	10,466	
		Sho rob	2,716	2,854	2,077	843	623	9,112	
		Ter tom	99	69	37	15	12	233	
39	JADA PRF	Ano lat	1,156	713	420	152	93	2,534	40.88
		Dio mel	1,123	731	396	168	83	2,499	
		Misc	10,966	5,781	2,747	909	734	21,138	
		Sho rob	5,602	5,565	4,097	1,769	1,396	18,430	
		Ter tom	192	146	88	39	17	482	

40	KARO RF	Ano lat	10260	5618	2655	1044	574	20148	39.63
		Dio mel	8407	5945	3112	1373	563	19403	
		Misc	89773	41651	20586	5932	6553	164493	
		Sho rob	49113	40631	27713	10592	8191	136238	
		Ter tom	1652	750	546	269	310	3530	
41	KHAJURDIHI RF	Ano lat	21005	12701	6669	2602	1426	44402	46.42
		Dio mel	18207	12017	6701	3020	1453	41398	
		Misc	210100	101523	46274	17256	11996	387153	
		Sho rob	126004	137563	94852	35323	23588	417333	
		Ter tom	3764	2515	1452	675	292	8698	
42	MENDHAMARUNI RF	Ano lat	2550	1404	672	272	140	5038	41.71
		Dio mel	2139	1524	773	379	152	4969	
		Misc	22121	10588	5324	1636	1627	41296	
		Sho rob	12610	11337	7908	3128	2434	37417	
		Ter tom	443	228	169	78	77	994	

43	RAKSHI-I RF	Ano lat	9679	5617	2823	1091	545	19756	40.43
		Dio mel	9010	5540	2921	1269	462	19202	
		Misc	87924	42865	19510	6678	5199	162174	
		Sho rob	48063	40870	29203	12046	8852	139037	
		Ter tom	1636	1073	559	312	142	3724	
44	KATHAMAL RF	Ano lat	704	397	212	74	45	1,432	32.87
		Dio mel	564	408	230	88	42	1,333	
		Misc	6,234	2,864	1,437	325	484	11,344	
		Sho rob	2,859	2,005	1,265	467	394	6,989	
		Ter tom	79	26	25	12	25	167	
45	TODA RF	Ano lat	123776	74983	40133	15002	8313	262202	43.04
		Dio mel	113813	71665	38486	19008	8137	251116	
		Misc	1068760	549289	272338	92346	72643	2055387	
		Sho rob	623402	594229	427850	189909	148662	1984060	
		Ter tom	25378	14431	10216	4765	2588	57382	

46	KHAJURDIHI PRF	Ano lat	7564	4585	2387	908	493	15940	49.66
		Dio mel	6024	4157	2363	1103	578	14228	
		Misc	87348	39545	17112	6734	4141	154882	
		Sho rob	52161	66227	44038	14453	8512	185390	
		Ter tom	1221	827	491	229	109	2878	
47	RAKSHI-II RF	Ano lat	11554	6517	3094	1303	584	23055	42.18
		Dio mel	12660	7192	3229	1412	447	24941	
		Misc	108326	51891	22881	8300	6128	197527	
		Sho rob	64547	51924	37670	16104	12905	183151	
		Ter tom	2851	1446	799	343	130	5570	
48	SARKUNDA RF	Ano lat	17936	10746	5675	2232	1147	37734	41.55
		Dio mel	16869	10685	5585	2547	989	36677	
		Misc	164178	81983	38540	13547	10459	308709	
		Sho rob	92225	82808	59165	24683	18635	277515	
		Ter tom	2994	2194	1258	549	264	7258	
49	SARKUNDA PRF	Ano lat	34298	20543	10714	4257	2178	71989	41.49
		Dio mel	32590	20657	10700	4746	1846	70539	
		Misc	318293	158072	73741	25932	20430	596468	
		Sho rob	177953	158953	113795	46997	36159	533859	
		Ter tom	5651	4264	2476	1039	500	13932	
50	TODA-III PRF	Ano lat	1,804	1,051	483	212	87	3,636	41.78
		Dio mel	1,669	1,020	510	241	66	3,507	
		Misc	16,343	7,625	3,453	1,313	957	29,691	
		Sho rob	9,852	7,917	5,493	2,157	1,515	26,934	
		Ter tom	300	219	110	47	22	698	
51	TODA-IV PRF	Ano lat	1,956	1,222	704	251	135	4,268	31.43
		Dio mel	1,625	1,027	647	236	107	3,642	
		Misc	16,721	7,817	3,801	986	1,182	30,507	
		Sho rob	8,293	4,792	2,738	1,152	814	17,790	
		Ter tom	178	91	51	24	44	388	

52	DHENKIAM RF	Ano lat	38343	24304	17500	6131	2285	88564	40.63
		Dio mel	44072	27765	17497	4709	3817	97863	
		Misc	373464	188455	87164	29968	22383	701437	
		Sho rob	203859	184472	141487	53731	44195	627737	
		Ter tom	10320	8370	6511	3887	497	29580	
53	GURUNDIA RF	Ano lat	26738	14480	8395	3434	1180	54226	36.7
		Dio mel	26020	14731	7619	3004	917	52291	
		Misc	248328	117960	51281	16543	12844	446956	
		Sho rob	113826	95387	67823	27739	20881	325656	
		Ter tom	3450	2563	1228	678	295	8214	
54	KUSUMDIHI RF	Ano lat	45057	29283	17224	5946	3741	101251	40.67
		Dio mel	41665	28541	16775	6544	3746	97271	
		Misc	409264	232128	111786	34333	28762	816273	
		Sho rob	199643	217398	167680	69636	55385	709742	
		Ter tom	8798	6484	3398	1293	622	20595	
55	RUSHIMATH RF	Ano lat	79354	42228	16424	6446	3398	147848	40.13
		Dio mel	83088	44716	20754	9654	3535	161746	
		Misc	571532	311160	147980	45047	30053	1105772	
		Sho rob	337359	290366	192982	84748	57809	963263	
		Ter tom	10794	6629	2829	1181	532	21963	
56	DHENKIAM-I PRF	Ano lat	983	593	333	122	68	2,100	42.25
		Dio mel	934	618	320	143	70	2,086	
		Misc	8,744	4,597	2,312	720	685	17,059	
		Sho rob	4,800	4,714	3,426	1,524	1,397	15,862	
		Ter tom	152	113	102	42	29	438	
57	DHENKIAM-II PRF	Ano lat	971	545	253	100	48	1,917	40.56
		Dio mel	872	524	269	122	35	1,822	
		Misc	8,644	4,040	1,824	645	480	15,632	
		Sho rob	4,886	3,935	2,763	1,112	772	13,467	
		Ter tom	168	100	49	30	15	362	

58	GURUNDIA PRF	Ano lat	6412	3630	1686	665	330	12723	40.21
		Dio mel	5687	3339	1746	757	207	11736	
		Misc	56738	26146	11768	4189	3150	101991	
		Sho rob	32532	25022	17284	6952	4798	86590	
		Ter tom	1068	631	311	185	92	2288	
59	KUSUMDIHI- I PRF	Ano lat	1129	653	325	124	62	2293	37.01
		Dio mel	1005	613	328	137	42	2125	
		Misc	10153	4686	2141	686	605	18271	
		Sho rob	5339	3859	2590	1024	724	13536	
		Ter tom	156	96	47	26	19	343	
60	KUSUMDIHI- III PRF	Ano lat	2,649	1,646	1,011	375	209	5,891	40.29
		Dio mel	2,465	1,734	954	462	224	5,840	
		Misc	24,269	13,001	6,473	2,050	1,729	47,522	
		Sho rob	12,349	12,549	9,038	3,880	2,862	40,678	
		Ter tom	428	308	176	73	48	1,033	
61	RUSHIMATH- II PRF	Ano lat	2,481	1,424	696	271	120	4,992	36.56
		Dio mel	2,328	1,385	694	304	73	4,784	
		Misc	23,171	10,645	4,710	1,588	1,267	41,381	
		Sho rob	11,696	8,519	5,839	2,270	1,604	29,928	
		Ter tom	330	240	108	58	34	770	

2.6.2. Silvicultural Systems: The Selection system will be adopted with emphasis on sustainable production and stability of the ecosystem. The crop and soil condition will be improved by selective opening up of the canopy. Conservative felling or no felling will be prescribed in eroded and steep hill slopes, blank areas and along nallah banks. The failure of conversion to uniform and coppice system in the past, poor status of the crop in the Selection area of outgoing plan and in the PRF blocks has necessitated the adoption of this silvicultural system. The exploitation of the trees of exploitable girth aims at sustained yield consistent with ecological balance and environmental protection.

2.6.2.1 Choice of species: Sal is the most important species in all the forest blocks of this working circle and is to be treated as principal species. In addition to it, Bija (*Pterocarpus marsupium*), Sisoo (*Dalbergia latifolia*), Gambhar (*Gmelina arborea*), and Champa (*Michelia champaca*), are to be treated as principal species. Asan (*Terminalia tomentosa*), Kurum (*Adina cordifolia*), Kusum (*Schleichera oleasa*), Dhaura (*Anongeissus latifolia*), Kasi (*Bridelia retusa*), Mundi (*Mitragyna parviflora*), Bandhan (*Ougeinia oojeinensis*), Simul (*Bombax ceiba*), Tentra (*Albizia procera*), and Bamboo area to be treated as secondary species. Fruit bearing and NTFP yielding species such as Mohul (*Madhuca indica*), Amba (*Mangifera indica*), Anla (*Emblica officinalis*), Bahada (*Terminalia bellerica*), Tentuli (*Tamarindus indica*), karanja (*Pongamia pinnata*), Jamu (*Syzygium cumuni*), Kendu (*Diospyros melanoxylon*), Char (*Buchannia lanzan*), and Bel (*Aegle marmelos*), are to be treated as guest species. All other species will be given due importance.

2.6.3 Rotation Period: It is the period required for a particular species to attain the exploitable girth. It also depends upon the site quality of the crop. Theoretically, rotation may be taken as the age at which the principal species attain exploitable girth i.e. where the MAI (Mean Annual Increment) curve meets the CAI (Current Annual Increment) curve on stem timber volume consideration. Rotation of Sal varies from 120 to 150 years in Bonai Forest Division depending upon the Site Quality.

2.6.4 Harvestable diameter:

2.6.4.1. Following important parameters have been taken into consideration for fixing the exploitable size for Sal and other important species: -

- i. The size beyond which the unsoundness begins developing.
- ii. The site Quality.
- iii. Data available in the yield stand table for different species.
- iv. Enumeration figures available for different RF and PRF blocks.
- v. Market demand.

2.6.4.2 In the previous Revised Working Plan, individual exploitable girth had been prescribed for Sal, Pia-Sal (Bija), Sissoo , Kurum, Mundi, Gambhar, Asan, Bandhan and other species for different forest blocks. During last 20 to 22years, the biotic pressure on forest has increased a lot. As a result, forest vegetation has suffered degradation. Bonai Forest Division is having a vast stretch of beautiful Sal forest. To boost the economy of the State as well as the Country, Iron Ores and Manganese Ores are being explored from this Division. Hence, to check degradation of forest vegetation, to mitigate the effect of climate change and to reduce the emmission of Green House Gas (GHG) in the atmosphere ,there is an urgent need to improve Carbon Sequestration in forest and increase the Carbon stock of forest. In such circumstances, conservation of middle aged trees in Bonai Forest Division is most essential. Exploitable girths fixed for different species for different Coupes in the previous Revised Working Plan have been followed to some extent in all the Selection coupes of this Revised Working Plan also. The Working Plan Officer –cum- Divisional Forest Officer, Bonai Forest Division is constrained to prescribe conservative felling. The exploitable girth fixed at less than 120cm in the previous Plan has not been followed and the minimum exploitable girth for all species in this Plan has been prescribed at 120cm . However, in other cases, the exploitable girth has followed as same as in the previous working plan. The enumeration of Growing Stock has been made on 30cm. girth class basis i.e 30-59cm, 60-89cm, 90-119 cm, 120-149cm and >150cm. Exploitable girths prescribed for different speices in different forest blocks are as detailed in the table 2.6.4.2

Table 2.6.4.2 Exploitable Girth for different Species in different Forest Blocks.											
Range	Name of block	Block-Wise exploitable Girth Fixed for Different Species (in cm)									GBH Class of approach class
		Sal	Bija	Sissoo	Kurum	Mundi	Gambhar	Asan	Bandhan	Other Species	
1	2	3	4	5	6	7	8	9	10	11	12
Bonai	Budhapahad RF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Bonai	Dandapat (East) RF	120	135	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Bonai	Dandapat (West) RF	120	135	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Bonai	Sinduria RF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Bonai & Jarda	Ulsura RF	120	135	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Bonai	Bandhabhuin-Bhadimara PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Bonai	Budhapahad 'B' PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Kuliposh & Barsuan	Amrudi RF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Kuliposh	Lunga RF	150	120	120	120	135	120	150	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Kuliposh	Mahulpada RF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Kuliposh	Lunga PRF	150	120	120	120	135	120	150	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Kuliposh & Barsuan	Nagaria PRF	120	135	120	120	135	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Sole	Balai RF	135	120	120	135	135	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Sole	Jada RF	120	135	120	120	135	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Sole & Jarda	Kantamunda RF	135	150	120	150	135	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Sole	Kunjar RF	135	135	120	135	120	120	120	105	120	90-119 for EG of 120 105-134 for EG of 135
Sole	Sirigida RF	120	120	120	120	135	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Sole	Sulguda RF	135	150	120	120	120	120	135	105	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Sole	Balai PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Sole	Kantamunda-I (Part-I)	120	120	120	135	135	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Sole	Kantamunda-I (Part-II)	150	135	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Sole	Kantamunda-II	135	120	120	120	120	120	120	120	120	90-119 for EG of 120

											105-134 for EG of 135
Sole	Mahuldihi PRF (Part-I)	135	120	120	120	120	120	150	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Sole	Mahuldihi PRF (Part-II)	135	150	120	135	135	105	150	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Sole	Sirigida PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Sole	Suluguda PRF	135	135	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Sole	Jada PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Jarda	Balia RF	120	135	105	120	120	120	135	105	120	90-119 for EG of 120 105-134 for EG of 135
Jarda	Kelo 'A' RF	135	150	120	120	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Jarda & Sole	Majurdima RF	120	135	120	120	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Jarda	Raipiri RF	150	135	120	150	150	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Jarda	Balia (Part-I)	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Jarda	Balia (Part-II)	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Jarda	Kelo PRF	135	120	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Jarda	Majurdima PRF (Part'A')	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Jarda	Majurdima PRF (Part-B)	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Jarda	Raipiri PRF-I	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Jarda	Raipiri PRF II	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Koira	Mendhamaruni RF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Koira	Karo RF	150	150	120	135	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Koira & Barsuan	Khajurdihi RF	135	135	120	135	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Koira	Rakshi-I RF	120	120	135	120	120	120	120	120	120	90-119 for EG of 120
Koira & Barsuan	Toda RF	150	150	120	150	135	120	150	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Koira	Khajurdihi PRF	150	150	120	150	120	105	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Koira	Soyamba PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Barsuan	Rakshi-II RF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120

Barsuan	Sarkunda RF	150	150	120	135	135	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Barsuan	Sarkunda PRF	150	150	120	120	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Barsuan	Toda-III PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Barsuan	Toda-IV PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Tamra	Dhenkiam RF	120	135	120	150	120	120	150	120	120	90-119 for EG of 120 105-134 for EG of 135 120-149 for EG of 150
Tamra	Gurundia RF	120	135	120	120	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Tamra	Kusumdihi RF	120	135	120	135	120	120	120	120	120	90-119 for EG of 120 105-134 for EG of 135
Tamra & Jarda	Rusimath RF	120	135	120	135	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Tamra	Dhenkiam-I PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Tamra	Dhenkiam-II PRF	120	120	120	120	120	120	120	120	120	90-119 for EG of 120
Tamra	Kusumdihi-I PRF	135	120	120	135	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Tamra	Kusumdihi-III PRF	135	135	120	135	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Tamra	Gurundia PRF	120	120	120	135	135	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135
Tamra	Rushimath-II PRF	120	135	120	135	120	120	135	120	120	90-119 for EG of 120 105-134 for EG of 135

2.6.5 Reducing Factors and Reduced area: Forest inventory has been taken up in Bonai Forest Division by enumerating forest species in the sample plots of 0.1ha. of 1030 nos sample points have been provided by ORSAC, Bhubaneswar on the basis of Stratified Random Sampling covering the forests of the Division. Tree species above 30 cms girth have been enumerated. From the enumeration data, basal area can be assessed and used for density reduction.

2.6.6 Felling Cycle: In the previous Working Plan for the period from 1997-98 to 2016-17 the felling cycle was 20 years though there was Selection Working Circle. In this Revised Working Plan the felling cycle of 10 years has been prescribed synchronizing the plan period. The total forest area under Selection Working Circle will be worked within 10 years.

2.6.7 Calculation of Yield: The yield has been regulated by area with a percentage check on removal of selection trees arrived at by Smythies safeguarding formula. The yield has been calculated in Selection Working Circle for different annual coupes, Felling Series wise, basing upon the enumeration results of trees on Stratified Random Sampling method.

Smythies formula postulates that yield available during the felling cycle is regulated by the number of sound trees of the next lower girth class (approach class-II) that may survive and pass into next higher girth class (Class-I) during the felling cycle. This is expressed by the following formula.

$$X = \frac{F(II - Z \% \text{ of II})}{T} \quad (1)$$

Where

X = Number of trees in approach class that passes into the exploitable class within period of felling cycle.

II = No. of trees in pre- exploitable girth class or approach class

F = Felling cycle (10 years)

T = Time period in years that takes approach class to pass into exploitable class
(40 years for Bonai Forest Division)

Z = Percentage of Class II trees that do not pass into class I in 'T' years, due to mortality or removal in thinnings etc. i.e. taken as 40% for Bonai Forest Division considering the local biotic pressure on the forest.

Putting the value of F, T and Z –

$$X = 10/40(11 - 40/10011) \\ = 0.1511$$

The percentage of the trees available for exploitation (Y) is calculated as follows.

$$Y = \frac{X}{(1 + X/2)} \times 100 \pm A \quad \text{-----} \quad (2)$$

Where A = Arbitrary value to get the round figure of 'Y'

X = Number of trees in approach class which passes into the exploitable class

I = Number of trees already existing in the exploitable class.

When the value of 'X' in equation (1) is substituted in the equation (2), the resulting equation is as follows.,

$$Y = \frac{0.1511 \times 100 \pm A}{1 + 0.07511} \quad \text{-----} \quad (3)$$

Number of approach class trees and exploitable trees for Forest Blocks included in the Selection Working Circle got derived from "the data on stand of growing stock" provided by NRSA, Hyderabad. By using this data, Yield as per Smythies Safe guarding formula got arrived for Sal and Non-Sal species separately. By keeping this yield as a limit, and also by considering field conditions through ground truthing, yield for each Forest Block has prescribed.

The following table provides the proposed yield for each Forest Blocks included in the Selection Working Circle. It is prescribed to calculate the number of trees which is prescribed to cut from each Coupe by multiplying the actually working out coupe area with the proposed yield (number of trees per ha.). In no circumstances, the number of tree felling should exceed these prescribed trees. However, the number of trees to be felled may be less than the prescribed (proposed) yield, coinciding with the field condition.

The yield calculation of different blocks is shown in the following **Table No.2.6.7.1**

Table No 2. 6 .7.1 Calculation of Ylled for different Forest Blocks

Sl. No.	BLOCK	Area in ha.	Approach class (ii)		Exploitable class (I)		Yield calculated as per SSF (% of exploitable trees		Yield Prescribed(% of exploitable trees))		Proposed Yield(No. of trees)			Proposed Yield(No. of trees/ ha)		
			Sal	Non-sal	Sal	Non-sal	Sal	Non-sal	Sal	Non-sal	SAL	NON SAL	TOTAL	SAL	NON SAL	Total
1	BUDHAPAHAD RF	1064.47	40587	40884	31763	23054	17	23	3	4	953	922	1875	0.9	0.9	1.8
2	DANDPAT (EAST BLOCK) RF	409.5	8938	7053	5697	4742	21	20	5	5	285	237	522	0.7	0.6	1.3
3	DANDPAT (WEST BLOCK) RF	2294.06	61225	53435	44355	32890	19	22	5	7	2218	2302	4520	1	1	2
4	SINDURIA RF	1034.16	28459	25561	20276	15739	19	22	4	4	811	630	1441	0.8	0.6	1.4
5	ULSURA RF	1387.19	30085	30432	21405	17846	19	23	6	7	1284	1249	2533	0.9	0.9	1.8
6	BANADABHUIN BHARIM PRF	851.125	6242	10558	4488	5901	19	24	7	10	314	590	904	0.4	0.7	1.1
7	BUDHAPAHAD-B-PRF part-I	273.438	5049	4442	3616	2721	19	22	4	4	145	109	254	0.5	0.4	0.9
8	BUDHAPAHAD-B-PRF part-II	119.063	2171	1910	1555	1172	19	22	4	4	62	47	109	0.5	0.4	0.9
9	AMRUDI RF	1374.12	33501	35092	24371	20258	19	23	5	5	1219	1013	2232	0.9	0.7	1.6
10	LUNGA RF	5242.15	64583	109896	52899	68452	17	21	4	5	2116	3423	5539	0.4	0.7	1.1
11	MAHULPADA RF	3402.55	53963	60025	40138	31965	18	25	6	9	2408	2877	5285	0.7	0.8	1.5
12	LUNGA PRF	257.063	1718	1979	1478	1330	16	20	4	5	59	67	126	0.2	0.3	0.5
13	NAGARIA PRF	4983.881	146025	135846	103592	83259	19	22	4	5	4144	4163	8307	0.8	0.8	1.6

14	BALIA RF	1435.81	50884	43676	37881	26775	18	22	3	4	1136	1071	2207	0.8	0.7	1.5
15	KELLO A RF	2041.98	25486	23193	19954	16064	17	20	8	10	1596	1606	3202	0.8	0.8	1.6
16	MAJURDIMA RF	3338.76	105400	90926	77183	53587	19	23	7	9	5403	4823	10226	1.6	1.4	3
17	RAIPIRI RF	6614.33	84705	130233	68052	80434	17	22	6	8	4083	6435	10518	0.6	1	1.6
18	BALIA PRF-I	133.75	6076	2700	4837	1649	17	22	3	4	145	66	211	1.1	0.5	1.6
19	BALIA PRF-I I	274.27	5286	5272	3747	3035	19	23	6	7	225	212	437	0.8	0.8	1.6
20	KELLO PRF	69.462	3641	4945	2851	3135	17	21	3	3	86	94	180	1.2	1.4	2.6
21	MAJURDIMA PRF Part-A	148.5	5001	3786	3775	2368	18	21	5	5	189	118	307	1.3	0.8	2.1
22	MAJURDIMA PRF Part-B	26.11	850	644	641	403	18	21	4	4	26	16	42	1	0.6	1.6
23	RAIPIRI -I PRF	36.312	106	80	80	50	18	21	9	10	7	5	12	0.2	0.1	0.3
24	RAIPIRI - II PRF	247.562	744	563	561	352	18	21	9	10	50	35	85	0.2	0.1	0.3
25	BALAI RF	3294.68	65338		51356		17	22	9	9	4622	0	4622	1.4	0	1.4
26	JADA RF	1714.5	51407	45212	38334	27757	18	22	7	7	2683	1943	4626	1.6	1.1	2.7
27	KANTAMUNDA RF	4348.29	85053	69864	64487	45041	18	21	6	6	3869	2702	6571	0.9	0.6	1.5
28	KUNJAR RF	4589.34	90741.5	122312	63972	64116	19	25	7	10	4478	6412	10890	1	1.4	2.4
29	SIRIGIRHA RF	2886.92	119008	120392	96767	69143	17	23	4	4	3871	2766	6637	1.3	1	2.3
30	SOLGUDA RF	2505.21	59712.5	66427	41398	40495	20	22	6	9	2484	3645	6129	1	1.5	2.5
31	BALAI PRF	88.5	1996.5	2172	1653	1353	17	21	5	6	83	81	164	0.9	0.9	1.8
32	KANTAMUNDA-I PRF Part-I	289.5	1733	3851	1287	2351	18	22	9	11	116	259	375	0.4	0.9	1.3

33	KANTAMUNDA-I PRF Part-II	229.75	2228	4951	1655	3021	18	22	5	7	83	211	294	0.4	0.9	1.3
34	KANTAMUNDA-II PRF	84.938	1393	1834	1026	1119	18	22	4	7	41	78	119	0.5	0.9	1.4
35	MAHULDIHI-PRF- Part-I	316.687	5179	9008	4688	5111	15	23	4	7	188	332	520	0.6	1	1.6
36	MAHULDIHI-PRF- Part-II	227.812	4543.5	5441	3344	3353	18	22	5	5	167	168	335	0.7	0.7	1.4
37	SIRIGIRHA PRF	73.312	2142	2304	1754	1360	17	23	4	5	70	68	138	1	0.9	1.9
38	SOLGUDA PRF	62.812	1460	1876	1045	1143	19	22	7	9	73	103	176	1.2	1.6	2.8
39	JADA PRF	105.544	4097	3651	3165	2195	18	22	4	4	127	88	215	1.2	0.8	2
40	KARO RF	1406.02	10592	17759	8191	12309	18	20	7	5	573	615	1188	0.4	0.4	0.8
41	KHAJURDIHI RF	2144.31	65087.5	61096	41250	38720	21	21	3	3	1238	1162	2400	0.6	0.5	1.1
42	MENDHAMARUNI RF	287.75	7908	6938	5562	4361	19	21	4	4	222	174	396	0.8	0.6	1.4
43	RAKSHI-I RF	1157.83	29203	25813	20898	15698	19	22	6	8	1254	1256	2510	1.1	1.1	2.2
44	KATHAMAL RF	10.086	467	1202	394	846	16	19	2	2	7	15	22	0.7	1.5	2.2
45	TODA RF	12572.17	189909	246147	148662	157242	17	21	6	7	8920	11007	19927	0.7	0.9	1.6
46	KHAJURDIHI PRF	792.938	14453	15664	8512	9808	23	21	7	6	596	588	1184	0.8	0.7	1.5
47	RAKSHI-II RF	1456.33	37670	30003	29009	18647	18	22	4	11	1160	2051	3211	0.8	1.4	2.2
48	SARKUNDA RF	1934.63	24683	34967	18635	22297	18	21	6	8	1118	1784	2902	0.6	0.9	1.5
49	SARKUNDA PRF	3452.05	46997	66803	36159	42941	18	21	6	6	2170	2576	4746	0.6	0.7	1.3
50	TODA-III PRF	287.813	5493	4556	3672	2945	20	21	4	4	147	118	265	0.5	0.4	0.9

51	TODA-IV PRF	166.52	2738	5203	1966	2965	19	23	3	4	59	119	178	0.4	0.7	1.1
52	DHENKIAM RF	5673.88	141487	86684	97926	51330	20	22	8	8	7834	4106	11940	1.4	0.7	2.1
53	GURUNDIA RF	2514.28	67823	68523	48620	38895	19	23	4	5	1945	1945	3890	0.8	0.8	1.6
54	KUSUMDIHI RF	5225.26	167680	149183	125021	84987	18	23	5	6	6251	5099	11350	1.2	1	2.2
55	RUSHIMATH RF	6665.42	192982	187987	142557	99846	18	25	6	8	8553	7988	16541	1.3	1.2	2.5
56	DHENKIAM-I PRF	130.438	3426	3067	2921	1879	16	22	4	4	117	75	192	0.9	0.6	1.5
57	DHENKIAM-II PRF	137	2763	2395	1884	1475	20	22	5	6	94	89	183	0.7	0.6	1.3
58	GURUNDIA PRF	905.501	17284	10654	11750	6677	20	21	4	4	470	267	737	0.5	0.3	0.8
59	KUSUMDIHI-I PRF	277.75	1807	2841	1236	1701	20	22	8	8	99	136	235	0.4	0.5	0.9
60	KUSUMDIHI-III PRF	345.251	6459	8614	4802	5170	18	22	4	4	192	207	399	0.6	0.6	1.2
61	RUSHIMATH-II PRF	138.178	5839	4215	3874	2605	20	22	4	4	155	104	259	1.1	0.8	1.9

2.6.8 Table of Felling: To execute the felling of trees on the forest areas allotted to Selection Working Circle, each Felling series has been divided into 10 nos of annual Coupes to be worked each year during the plan period. The area statement of annual Coupes of the felling series is given in the following **Table No.2.6.8.1**

Table No.2.6.8.1 Annual Coupes of the Felling Series							
Amrudi Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Amrudi	RF	Am 4 (b) Am 3 (b)	206.682 115.368	322.050
2022-23	II	Kuliposh	-do-	RF	Am 2 (b) Am 1 (b)	151.742 224.580	376.322
2023-24	III	Kuliposh	Mahulpada	RF	Mp 1 (b) Mp 2 (b)	282.055 328.937	610.992
2024-25	IV	Kuliposh	-do-	RF	Mp 3 (b) Mp 4 (b)	381.312 286.598	667.910
2025-26	V	Kuliposh	-do-	RF	Mp 5 (b) (part) Mp 5 (b) (bal)	201.563 233.319	434.882
2026-27	VI	Kuliposh	-do-	RF	Mp 6 (b) (bal) Mp 6 (b) (part) Mp 7 (part)	139.000 247.674 132.125	518.799
2027-28	VII	Kuliposh	-do-	RF	Mp 7 (bal) Mp 8 (b)(part)	239.469 321.398	560.867
2028-29	VIII	Kuliposh	-do-	RF	Mp 9 (b) Mp 10 (b)	300.291 308.809	609.100
2029-30	IX	Barsuan Kuliposh	Amrudi	RF	Am 7 (b) Am 8 (b)	122.526 191.106	313.632
2030-31	X	Kuliposh	-do-	RF	Am 9 (b) Am 5 (b)	255.792 106.323	362.115
						4776.669	4776.669

Am :- Amrudi RF , Mp :- Mahulpada RF

Dandapat Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Dandapat West	R.F.	D.W. 1 (part) D.W. 2 (part) D.W. 1 (bal)	152.648 39.546 72.942	265.136
2022-23	II	Bonai	-do-	R.F.	D.W. 2 (part) D.W. 2 (part)	120.033 144.305	264.338
2023-24	III	Bonai	-do-	R.F.	D.W. 2 (bal) D.W. 3 (part)	132.738 170.978	303.716
2024-25	IV	Bonai	-do-	R.F.	D.W. 3 (part) D.W. 4 (part) D.W. 3 (bal)	125.848 87.922 46.269	260.039
2025-26	V	Bonai	-do-	R.F.	D.W. 4 (part) D.W. 4 (part)	116.620 126.796	243.416
2026-27	VI	Bonai	-do-	R.F.	D.W. 4 (bal) D.W. 5 (part)	113.143 144.242	257.385
2027-28	VII	Bonai	-do-	R.F.	D.W. 5 (part) D.W. 5 (bal)	124.963 118.578	243.541
2028-29	VIII	Bonai	-do-	R.F.	D.W. 6 (part) D.W. 6 (bal)	156.694 159.222	315.916
2029-30	IX	Bonai	Dandapat East	R.F.	D.E. 1 D.E. 2 (part)	147.925 117.277	265.202
2030-31	X	Bonai	Dandapat East/ West	R.F.	D.E. 2 (bal) D.W. 1 (part)	144.298 140.576	284.874
						2703.563	2703.563

D.E. :- Dandapat East RF,

D.W. :- Dandapat West RF

Lunga Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Lunga	RF	L. 5 L. 7 (part) L. 6 L. 7 (bal)	164.664 89.760 182.152 105.054	541.630
2022-23	II	Kuliposh	-do-	RF	L. 8 L. 9	227.000 218.500	445.500
2023-24	III	Kuliposh	-do-	RF	L. 10 L. 11	157.625 284.385	442.010
2024-25	IV	Kuliposh	-do-	RF	L. 12 L. 13 L. PRF	288.083 94.625 257.063	639.771
2025-26	V	Kuliposh	-do-	RF	L. 14 L. 25 L. 15	157.957 154.885 389.125	701.967
2026-27	VI	Kuliposh	-do-	RF	L. 16 L. 17	296.357 370.948	667.305
2027-28	VII	Kuliposh	-do-	RF	L. 18 L. 19 (part) L. 20 L. 19 (bal)	142.475 103.237 95.088 71.645	412.445
2028-29	VIII	Kuliposh	-do-	RF	L. 21 (part) L. 22 L. 21 (bal)	277.051 204.466 56.915	538.432
2029-30	IX	Kuliposh	-do-	RF	L. 1 (part) L. 1 (bal)	243.517 266.145	509.662
2030-31	X	Kuliposh	-do-	RF	L. 2 L. 3 L. 4	115.146 220.638 264.703	600.487
						5499.209	5499.209

L. :- Lunga

Nagaria Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Nagaria PRF	PRF	N. 4 (b)(bal) N. 5 (b)(bal)	216.327 119.782	336.109
2022-23	II	Kuliposh	-do-	PRF	N. 6 (b) N. 7 (b)	352.062 417.063	769.125
2023-24	III	Kuliposh	-do-	PRF	N. 9 (b) N. 10 (b) (part)	238.313 272.188	510.501
2024-25	IV	Kuliposh	-do-	PRF	N. 10 (b) (bal) N. 11 (b)	237.500 331.938	569.438
2025-26	V	Kuliposh	-do-	PRF	N. 12 (b) N. 13 (b)(bal)	427.188 343.547	770.735
2026-27	VI	Kuliposh	-do-	PRF	N. 14 (part) N. 14 (bal) N. 15 (b) (part)	414.063 142.187 226.875	783.125
2027-28	VII	Kuliposh Bonai	Nagaria PRF Bandhabhuin - Bhadimara	PRF	N. 15 (b) (bal) Bn. PRF (part)	281.250 438.125	719.375
2028-29	VIII	Bonai	Bandhabhuin - Bhadimara Budhapahar	PRF PRF	Bn. PRF (bal) Bd. (B) PRF (part-I) Bd. (B) PRF (part-II)	413.000 273.438 119.063	805.501
2029-30	IX	Barsuan	Nagaria	PRF	N. 2 (b) (part) N. 2 (b) (bal)	292.500 315.000	607.500
2030-31	X	BarsuanKu liposh	-do- -do-	PRF PRF	N. 3 (b) (part) N. 3 (b) (bal)	89.775 266.323	356.098
						6227.507	6227.507

N. :- Nagaria PRF,
Bn. :- Bandhabhuin-Bhadimara PRF,
Bd. :- Budhapahar PRF

Ulsura Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Budhapahar	RF	Bd. 3 (bal) Bd. 4 (b)	196.446 220.879	417.325
2022-23	II	Bonai	Sinduria	RF	Sr. 1 (b) (part) Sr. 1 (b) (bal) Sr. 2 (part)	152.104 62.071 160.617	374.792
2023-24	III	Bonai	-do-	RF	Sr. 2 (bal) Sr. 3 (part) Sr. 3 (bal)	99.600 63.377 178.262	341.239
2024-25	IV	Bonai	-do-	RF	Sr. 4 Sr. 5	153.284 164.842	318.126
2025-26	V	Jarda	Ulsura	RF	U. 1 (b) (part) U. 1 (b) (bal) U. 1 (c)	163.330 107.510 7.270	278.110
2026-27	VI	Jarda	-do-	RF	U. 4 (b) U. 5 (part)	107.294 223.859	331.153
2027-28	VII	Jarda	-do-	RF	U. 5 (bal) U. 7	185.379 142.513	327.892
2028-29	VIII	Jarda Jarda Jarda Jarda Bonai Jarda	-do-	RF	U. 3 (b) U. 3 (c) U. 6 (b) U. 6 (c) U. 8 (a) U. 8 (b)	93.192 50.951 51.704 22.749 38.165 193.276	450.037
2029-30	IX	Bonai	Budhapahar	RF	Bd. 1 Bd. 2 (part)	166.438 140.482	306.920
2030-31	X	Bonai	-do-	RF	Bd. 2 (bal) Bd. 3 (part)	182.202 158.018	340.220
						3485.814	3485.814

Bd. :- Budhapahar RF,
Sr. :- Sinduria RF,
U. :- Ulsura RF ,

Jada Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Sole	Sulguda	RF	Sg. 5 (a) Sg. 5 (b) Sg. 6 (b) Sg. 7 (b)	80.222 112.615 153.579 410.950	757.366
2022-23	II	Sole	Sulguda Jada Jada Sulguda	RF RF RF PRF	Sg. 8 J. 1 J. 2 (part) Sg. PRF	328.646 238.622 155.329 62.812	785.409
2023-24	III	Sole	Jada	RF	J. 2 (bal) J. 3 J. 4	173.714 342.675 368.438	884.827
2024-25	IV	Sole	Jada Jada Balai Mahuldihi	RF RF RF PRF	J. 5 J. 6 B. 1 Md. PRF II (part)	164.146 271.576 440.613 128.187	1004.522
2025-26	V	Sole	Balai Balai Mahuldihi	RF RF PRF	B. 2 B. 3 Md. PRF. 1 (part)	394.633 369.371 86.124	850.128
2026-27	VI	Sole	Balai Mahuldihi Balai	RF PRF RF	B. 4 Md. PRF-I (bal) B. 5	373.770 230.563 311.999	916.332
2027-28	VII	Sole	Balai	RF	B. 6 B. 7 (b)	385.019 306.406	691.425
2028-29	VIII	Sole	Balai Jada Balai	RF PRF PRF	B. 8 (b) B. 9 Entire B. PRF	288.308 424.559 105.544 88.500	906.911
2029-30	IX	Sole	Sulguda	RF	Sg. 1 (part) Sg. 1 (bal) Sg. 2 (part)	465.965 170.783 147.655	784.403
2030-31	X	Sole	Sulguda	RF	Sg. 2 (bal) Sg. 3 Sg. 4 (b) Sg. 4 (c)	101.272 193.406 185.969 154.146	634.793
						8216.116	8216.116

Sg. :- Sulguda RF,
 J. :- Jada RF,
 B. :- Balai RF,
 Md. :- Mahuldihi,
 B. :- Balai PRF

Kunjar Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Sole	Kunjar	RF	Kj. 7 Kj. 8	438.079 356.825	794.904
2022-23	II	Sole	Kunjar	RF	Kj. 9 Kj. 10	376.162 400.287	776.449
2023-24	III	Sole	Kunjar Kunjar Kantamunda	RF RF RF	Kj. 12 Kj. 11 Kt. 10 (part)	425.257 271.631 105.149	802.037
2024-25	IV	Sole	Kantamunda Kantamunda Kantamunda	RF PRF RF	Kt. 11 Kt. PRF-I (part) Part-II Kt. 10 (bal)	494.797 20.643 506.202	1021.642
2025-26	V	Sole	Kantamunda Kantamunda Kantamunda Kantamunda Mahuldihi	RF PRF RF PRF PRF	Kt. 9 Kt. PRF-II (part) Kt. 8 Kt. PRF-II (bal) Md. PRF-II (bal)	375.999 64.343 446.633 20.595 99.625	1007.195
2026-27	VI	Sole	Kantamunda Kantamunda	RF PRF	Kt. 5 Kt. 6 (part) Kt. 7 Kt. PRF-I (part) Part-II	212.798 160.447 520.620 90.452	984.317
2027-28	VII	Sole Jarda Sole Jarda	Kantamunda Kantamunda Kantamunda Kantamunda	RF RF PRF RF	Kt. 6 (bal) Kt. 4 Kt. PRF-I (Part-II) (bal) Kt. 3	163.459 322.303 23.756 471.793	981.311
2028-29	VIII	Sole	Kunjar	RF	Kj. 1 (part) Kj. 1 (bal) Kj. 2 (b)	406.522 130.385 371.375	908.282
2029-30	IX	Sole	Kunjar	RF	Kj. 3 (b) Kj. 3(c) Kj. 4 (b)	270.784 55.618 272.925	599.327
2030-31	X	Sole	Kunjar	RF	Kj. 5 Kj. 6	405.640 407.845	813.485
						8688.949	8688.949

Kj. :- Kunjar RF,

Kt. :- Kantamunda RF and PRF,

Md. :- Mahuldihi. PRF

Majurdima Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Jarda	Kelo 'A'	RF	Kl. 3 (bal) Kl. 5	250.620 279.935	530.555
2022-23	II	Jarda	Kelo 'A'	RF	Kl. 1 (part) Kl. 1 (bal) Kl. 2 (part)	323.657 86.693 255.004	665.354
2023-24	III	Jarda Sole	Kelo 'A' Majurdima Majurdima Majurdima	RF RF PRF PRF	Kl. 2 (bal) M. 8 (part) M. PRF-B (part) M. PRF-A	407.469 328.262 9.187 148.500	893.418
2024-25	IV	Jarda	Majurdima Kello 'A' Majurdima Majurdima	RF PRF RF PRF	M. 8 (bal) M. 7 (part) Kl. PRF (bal) M. 7 (bal) M. PRF-B (bal)	79.952 241.128 16.455 336.397 16.923	690.855
2025-26	V	Jarda	Majurdima	RF	M. 6 (part) M. 6 (bal)	317.267 324.218	641.485
2026-27	VI	Sole	Majurdima Kantamunda	RF PRF	M. 5 (part) M. 5 (bal) M. 3 Kt. PRF-I (part) (Part-II)	340.656 63.682 237.442 56.723	698.503
2027-28	VII	Jarda	Majurdima	RF	M.4 (part) M. 4 (bal)	269.792 224.604	494.396
2028-29	VIII	Jarda	Majurdima	RF	M. 2 M. 1	256.254 319.110	575.364
2029-30	IX	Jarda	Kantamunda Kantamunda Kantamunda Kantamunda	RF PRF RF PRF	Kt. 2 Kt. PRF-I (part) (Part-I) Kt. PRF-I (part) (Part-II) Kt. 1 Kt. PRF-I (Part-I) (bal)	339.155 137.375 38.176 228.929 152.125	895.760
2030-31	X	Jarda	Kelo 'A'	RF	Kl. 4 Kl. 3 (part)	209.528 229.072	438.600
						6524.290	6524.290

M.. :- Majurdima RF,
Kt. :- Kantamunda RF ,
Kl. :- Kelo'A' RF

Raipiri Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Jarda	Raipiri	RF	R. 10 Kelo PRF (part) R. 12 (part)	320.177 19.398 406.215	745.790
2022-23	II	Jarda	Raipiri	RF	R. 12 (bal) R. 13 (part) R. 13 (bal) R. 14 (part) R. 15 (part) R. PRF-II (part)	104.258 329.540 110.901 152.023 137.472 110.089	944.283
2023-24	III	Jarda	Raipiri	RF	R. 14 (bal) R. 15 (bal) R. 16 (part)	189.537 244.829 351.998	786.364
2024-25	IV	Jarda	Raipiri	RF	R. 16 (bal) R. 17 (part) R. 18 R. 17 (bal)	191.561 85.723 203.076 504.336	984.696
2025-26	V	Jarda	Raipiri Kelo Raipiri Raipiri Raipiri	RF PRF RF RF PRF	R. 1 Kl. PRF (part) R. 4 R. 5 (part) R. PRF-I (part)	324.162 33.609 253.939 142.975 16.488	771.173
2026-27	VI	Jarda	Raipiri Raipiri Raipiri Raipiri Raipiri	RF RF PRF RF PRF	R. 5 (bal) R. 6 R. PRF-II (part) R. 7 R. 8 (part) R. PRF-II (bal)	150.567 296.832 14.991 283.990 124.946 122.482	993.808
2027-28	VII	Jarda	Raipiri	RF	R. 8 (bal) R. 9 (part) R. 9 (bal) R. 3 (part)	150.757 220.474 342.825 89.898	803.954

2028-29	VIII	Jarda	Raipiri	RF	R. 3 (bal)	196.813	921.139
					R. 2 (part)	215.792	
			Raipiri	PRF	R. PRF-I (bal)	19.824	
			Raipiri	RF	R. 2 (bal)	135.194	
					R. 11	353.516	
2029-30	IX	Jarda	Balia	RF	Bl. 1 (part)	361.980	1104.124
			Balia	PRF	Bl. PRF-I (part)	90.031	
			Balia	PRF	Bl. PRF-II (part)	32.663	
			Balia	RF	Bl. 1 (bal)	377.845	
			Balia	PRF	Bl. PRF-II (bal)	241.605	
2030-31	X	Jarda	Balia	RF	Bl. 2	255.508	739.707
					Bl. 3 (part)	127.754	
			Balia	PRF	Bl. PRF-I (bal)	43.719	
					Bl. 3 (bal)	111.569	
			Balia	RF	Bl. 4	201.157	
						8795.038	8795.038

R. :- Raipiri RF,

Bl. :- Balia RF,

Kl. :- Kelo RF

Sirigida Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Sole	Sirigida	RF	Sr. 7 (part) Sr. 7 (bal)	171.472 132.751	304.223
2022-23	II	Sole	Sirigida	RF	Sr. 8 (part) Sr. 8 (bal) Sr. 9 (part)	157.913 75.488 82.614	316.015
2023-24	III	Sole	Sirigida	RF	Sr. 9 (part) Sr. 9 (bal)	135.841 140.823	276.664
2024-25	IV	Sole	Sirigida	RF	Sr. 12 (part) Sr. 12 (bal)	122.471 116.544	239.015
2025-26	V	Sole	Sirigida	RF	Sr. 14 (part) Sr. 14 (bal)	152.616 127.098	279.714
2026-27	VI	Sole	Sirigida	RF	Sr. 13 (part) Sr. 13 (bal)	126.822 121.020	247.842
2027-28	VII	Sole	Sirigida	RF	Sr. 11 (part) Sr. 11 (bal)	144.102 161.823	305.925
2028-29	VIII	Sole	Sirigida	RF	Sr. 10 (b) (part) Sr. 10 (b) (bal)	150.156 162.138	312.294
2029-30	IX	Sole	Sirigida Sirigida	RF PRF	Sr. 2 (b) Sr. 1 (part) Sr. PRF (part)	137.228 143.030 22.375	302.633
2030-31	X	Sole	Sirigida Sirigida Sirigida	RF PRF RF	Sr. 1 (bal) Sr. PRF (bal) Sr. 6 (b) Sr. 7 (part)	186.540 50.937 105.065 33.361	375.903
						2960.228	2960.228

Sr. :- Sirigida RF

Karo Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Karo	RF	K. 2 (part) K. 2 (bal)	121.591 132.119	253.710
2022-23	II	Koira	Karo	RF	K. 3 (part) K. 3 (part)	132.246 163.262	295.508
2023-24	III	Koira	Karo	RF	K. 3 (bal) K. 4 (part)	135.087 113.909	248.996
2024-25	IV	Koira	Karo Kathmal	RF RF	K. 4 (bal) Part	111.823 10.086	121.909
2025-26	V	Koira	Toda	RF	T. 25 (a) (part) T. 26 (a) T. 25 (a) (bal)	120.625 21.500 114.938	257.063
2026-27	VI	Koira	Toda	RF	T. 24 (part) T. 24 (bal)	175.875 168.063	343.938
2027-28	VII	Koira	Toda	RF	T. 23 (part) T. 23 (bal)	199.262 188.425	387.687
2028-29	VIII	Koira	Mendhama runi	RF	Mm. 3 Mm. 2	132.000 155.750	287.750
2029-30	IX	Barsuan	Toda	RF	T. 50 (a) T. 49 (a)	159.000 113.651	272.651
2030-31	X	Koira	Karo	RF	K. 1 (part) K. 1 (bal)	241.000 254.979	495.979
						2965.191	2965.191

T. :- Toda RF,

K. :- Karo RF,

Km.:- Kathmal RF,

Mm. :- Mendhamaruni RF

Khajurdihi Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Khajurdihi	RF	Kh. 2 (bal) Kh. 3 (part)	126.662 111.720	238.382
2022-23	II	Koira	Khajurdihi	RF	Kh. 3 (part) Kh. 3 (bal)	106.865 79.882	186.747
2023-24	III	Koira	Khajurdihi	RF	Kh. 4 (part) Kh. 4 (part)	91.987 109.261	201.248
2024-25	IV	Barsuan	Khajurdihi	RF	Kh. 5 (part) Kh. 4 (bal) Kh. 5 (part)	65.948 43.944 94.383	204.275
2025-26	V	Barsuan	Khajurdihi	RF	Kh. 5 (part) Kh. 6 (part)	89.591 121.745	211.336
2026-27	VI	Barsuan	Khajurdihi	RF	Kh. 6 (bal) Kh. 7 (part)	101.695 108.316	210.011
2027-28	VII	Barsuan	Khajurdihi	RF	Kh. 7 (bal) Kh. 8 (part)	121.935 107.559	229.494
2028-29	VIII	Barsuan	Khajurdihi	RF	Kh. 8 (part) Kh. 5 (bal) Kh. 8 (bal)	117.206 38.584 61.093	216.883
2029-30	IX	Koira	Khajurdihi	RF	Kh. 1 (part) Kh. 1 (bal)	114.747 103.272	218.019
2030-31	X	Koira	Khajurdihi	RF	Kh. 2 (part) Kh. 2 (part)	82.781 145.136	227.917
						2144.312	2144.312

Kh. :- Khajurdihi RF

Rakshi Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment &Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan Koira	Rakshi-II Rakshi-I	RF RF	R.II.2 R.I.1	215.675 146.159	361.834
2022-23	II	Koira	Rakshi-I	RF	R.I.2 R.I.3	154.302 184.579	338.881
2023-24	III	Koira	Rakshi-I	RF	R.I.4 (b) (part) R.I.4 (b) (bal)	114.329 124.153	238.482
2024-25	IV	Koira	Rakshi-I	RF	R.I.5 R.I.6 (part)	96.921 93.191	190.112
2025-26	V	Koira	Rakshi-I	RF	R.I.6 (part) R.I.6 (bal)	104.257 139.943	244.200
2026-27	VI	Barsuan	Rakshi-II	RF	R.II.3 (part) R.II.3 (bal)	86.017 118.051	204.068
2027-28	VII	Barsuan	Rakshi-II	RF	R.II.4 (part) R.II.4 (bal)	113.293 105.872	219.165
2028-29	VIII	Barsuan	Rakshi-II	RF	R.II.5 (part) R.II.5 (bal)	85.509 100.163	185.672
2029-30	IX	Barsuan	Rakshi-II	RF	R.II.1 (part) R.II.1 (part)	155.413 127.947	283.360
2030-31	X	Barsuan	Rakshi-II	RF	R.II.1 (part) R.II.1 (bal)	166.324 182.069	348.393
						2614.167	2614.167

R.I :- Rakshi-I RF

R.II :- Rakshi-II RF

Sarkunda Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Toda	RF	T. 8 (b) (bal) T. 9	171.313 147.438	318.751
2022-23	II	Barsuan	Toda Sarkunda	RF RF	T. 10 (a) S. 5 (part)	104.813 195.816	300.629
2023-24	III	Barsuan	Sarkunda	RF	S. 5 (bal) S. 3	210.388 197.645	408.033
2024-25	IV	Barsuan	Sarkunda	RF	S. 4 S. 2	231.143 281.485	512.628
2025-26	V	Koira	Toda	RF	T. 32 T. 28 (a)	174.813 204.163	378.976
2026-27	VI	Barsuan	Toda	RF	T. 41 (a) (part) T. 41 (a) (bal) T. 42 (a)	232.374 68.250 136.365	436.989
2027-28	VII	Barsuan	Toda Sarkunda Sarkunda	RF RF RF	T. 51 (a) S. 6 (part) S. 6 (bal)	137.502 59.301 258.017	454.820
2028-29	VIII	Barsuan	Sarkunda	RF	S. 1 (part) S. 1 (bal)	256.125 244.705	500.830
2029-30	IX	Barsuan	Toda	RF	T. 4 T. 6	197.930 267.188	465.118
2030-31	X	Barsuan	Toda	RF	T. 7 T. 8 (b) (part)	122.938 238.250	361.188
						4137.962	4137.962

T. :- Toda RF,

S. :- Sarkunda RF

Tensa Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan Koirā Barsuan	Toda	RF	T. 11 (b) (bal) T. 12(b) T. 51 (b) T. 50 (b)	142.813 183.945 12.865 36.481	376.104
2022-23	II	Barsuan Koirā	Toda	RF	T. 41 (b) T. 42 (b) T. 29 (b) T. 28 (b)	17.868 3.144 113.905 2.220	137.137
2023-24	III	Koirā	Toda	RF	T. 25 (b) T. 26 (b) T. 27	23.833 175.111 38.191	237.135
2024-25	IV	Barsuan Koirā Barsuan	Toda	RF	T. 35 T. 31 (b) T. 36	172.688 149.438 369.000	691.126
2025-26	V	Barsuan	Toda	RF	T. 37 (part) T. 39 (c) T. 37 (bal) T. 38 (b)	159.125 91.125 173.438 117.312	541.000
2026-27	VI	Barsuan	Toda	RF	T. 43 (b) (part) T. 39 (b) T. 40 (b) T. 45 (b) T. 44 (b) T. 43 (b) (bal)	30.230 43.571 73.436 97.786 39.133 55.125	339.281
2027-28	VII	Koirā	Toda	RF	T. 19 T. 18 (part) T. 18 (bal) T. 17 (b) (part)	238.438 79.875 128.813 124.125	571.251
2028-29	VIII	Koirā	Toda	RF	T. 17 (b) (bal) T. 33 (b) T. 14 (b)	236.125 122.177 127.375	485.677
2029-30	IX	Barsuan	Toda	RF	T. 5 T. 3	342.500 242.400	584.900
2030-31	X	Barsuan	Toda	RF	T. 1 T. 2 (b) T. 11 (b) (part) T. 10 (b)	79.052 136.701 229.375 78.478	523.606
						4487.217	4487.217

T. :- Toda RF

Toda Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira Koira/ Barsuan	Toda	RF	Td. 30 (a) Td. 40 (a)	189.125 242.562	431.687
2022-23	II	Koira	Toda	RF	Td. 22 (part) Td. 22 (bal) Td. 20 (part)	203.250 60.438 175.625	439.313
2023-24	III	Koira	Toda	RF	Td. 20 (bal) Td. 21 (part)	224.313 227.438	451.751
2024-25	IV	Koira Barsuan	Toda	RF	Td. 21 (bal) Td. 39 (a)	191.938 215.313	407.251
2025-26	V	Barsuan	Toda	RF	Td. 38 (a) Td. 43 (a) Td. 44 (a)	84.937 169.000 298.499	552.436
2026-27	VI	Barsuan	Toda	RF	Td. 45 (a) (part) Td. 45 (a) (bal) Td. 46 (a) Td. 47 (a)	217.750 80.500 79.562 3.375	381.187
2027-28	VII	Barsuan Koira	Toda	RF	Td. 48 Td. 14 (a)	173.379 247.312	420.691
2028-29	VIII	Koira	Toda	RF	Td. 15 (a) Td. 16 (part) Td. 16 (bal)	159.437 97.687 248.750	505.874
2029-30	IX	Koira	Toda	RF	Td. 33 (a) Td. 13 (part) Td. 13 (bal)	177.688 52.026 427.500	657.214
2030-31	X	Koira	Toda	RF	Td. 34 (part) Td. 34 (bal) Td. 31 (a)	202.375 28.687 141.812	372.874
						4620.278	4620.278

T. :- Toda RF

Sarkunda (PRF) Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Sarkunda	PRF	S. 5 (part) S. 5 (bal)	151.875 233.940	385.815
2022-23	II	Barsuan	Sarkunda	PRF	S. 6 (b) (part) S. 6 (b) (bal) S. 7 (b)	197.983 76.875 165.403	440.261
2023-24	III	Barsuan	Sarkunda	PRF	S. 8 (b) (part) S. 8 (b) (bal)	295.625 205.658	501.283
2024-25	IV	Barsuan	Sarkunda	PRF	S. 9 S. 13 (b) (part)	297.573 257.783	555.356
2025-26	V	Barsuan	Sarkunda	PRF	S. 13 (b) (bal) S. 12 (b) (part)	208.654 221.043	429.697
2026-27	VI	Barsuan	Sarkunda	PRF	S. 12 (b) (bal)	52.925	458.231
		Koira	Sarkunda	PRF	S. 11 (b)	91.212	
		Koira	Khajurdihi	PRF	Kh. 6 (b)	314.094	
2027-28	VII	Koira	Khajurdihi	PRF	Kh. 7 (b) Kh. 8 (part) Kh. 8 (bal)	63.256 127.187 288.401	478.844
2028-29	VIII	Barsuan	Toda	PRF	T. PRF. (Part-III) T. PRF (Part-IV)	287.813 166.515	454.328
2029-30	IX	Barsuan	Sarkunda	PRF	S. 1 S. 2	274.358 243.724	518.082
2030-31	X	Barsuan	Sarkunda	PRF	S. 4 (part) S. 4 (bal)	225.312 252.107	477.419
						4699.316	4699.316

S. :- Sarkunda PRF,

Kh. :- Khajurdihi PRF,

T. :- Toda PRF

Dhenkiam Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Tamra	Dhenkiam	RF	Dm. 16 (b) (part) Dm. 18 (b) (part) Dm. 16 (b) (bal)	219.250 117.312 127.750	464.312
2022-23	II	Tamra	Dhenkiam	RF	Dm. 18 (b) (bal) Dm. 18 (c) Dm. 20 (b)	203.625 16.938 157.812	378.375
2023-24	III	Tamra	Dhenkiam	RF	Dm. 19 (a) Dm. 19 (b) Dm. 15	59.937 237.938 231.438	529.313
2024-25	IV	Tamra	Dhenkiam	RF	Dm. 8 (b) Dm. 9 (part) Dm. 9 (bal) Dm. 10	205.250 87.313 108.750 180.937	582.250
2025-26	V	Tamra	Dhenkiam	RF	Dm. 11 Dm. 12	324.438 260.125	584.563
2026-27	VI	Tamra	Dhenkiam	RF	Dm. 13 Dm. 14 (part)	265.250 247.000	512.250
2027-28	VII	Tamra	Dhenkiam Dhenkiam Dhenkiam Dhenkiam	RF PRF RF PRF	Dm. 14 (bal) Dm. PRF-II Dm. 1 (part) Dm. PRF-I	219.062 137.000 246.625 130.438	733.125
2028-29	VIII	Tamra	Dhenkiam	RF	Dm. 1 (bal) Dm. 2 (part) Dm. 2 (bal) Dm. 3 (b)	101.250 192.625 72.062 136.564	502.501
2029-30	IX	Tamra	Dhenkiam	RF	Dm. 5 (b) Dm. 4	212.375 226.312	438.687
2030-31	X	Tamra	Dhenkiam	RF	Dm. 6 (b) Dm. 7 (b)	430.500 280.188	710.688
						5436.064	5436.064

Dm. :- Dhenkiam RF

Kusumdihi Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Tamra	Kusumdihi	RF	Kd. 2 Kd. 3 (part)	257.544 294.335	551.879
2022-23	II	Tamra	Kusumdihi Kusumdihi Kusumdihi	RF PRF RF	Kd. 4 Kd. PRF-III (part) Kd. 3 (bal) Kd. 5	302.469 67.089 105.991 230.791	706.340
2023-24	III	Tamra	Kusumdihi Kusumdihi	RF PRF	Kd. 6 Kd. 7 Kd. PRF-III (part)	286.773 235.493 122.110	644.376
2024-25	IV	Tamra	Kusumdihi Kusumdihi Kusumdihi Kusumdihi Kusumdihi	RF RF PRF RF PRF	Kd. 8 Kd. 9 (b) (part) Kd. PRF-III (part) Kd. 9 (b) (bal) Kd. PRF-I (part)	163.626 126.325 114.879 443.079 159.931	1007.840
2025-26	V	Tamra	Kusumdihi Kusumdihi Kusumdihi Kusumdihi	RF RF PRF RF	Kd. 10 Kd. 11 (b) (part) Kd. PRF-III (bal) Kd. 11 (b) (bal)	248.075 61.511 41.173 261.419	612.178
2026-27	VI	Tamra	Kusumdihi Kusumdihi Kusumdihi	RF PRF RF	Kd. 12 Kd. PRF-I (bal) Kd. 13	293.255 117.819 333.732	744.806
2027-28	VII	Tamra	Kusumdihi	RF	Kd. 14 Kd. 15 (part) Kd. 15 (bal)	211.982 131.981 294.462	638.425
2028-29	VIII	Tamra	Kusumdihi	RF	Kd. 17 Kd. 16	324.010 281.308	605.318
2029-30	IX	Tamra	Dhenkiam	RF	Dm. 17 (b) (part) Dm. 17 (b) (bal) Dm. 21 (b) (part)	174.125 58.188 61.438	293.751
2030-31	X	Tamra	Dhenkiam Kusumdihi	RF RF	Dm. 21 (b) (bal) Kd. 1	211.500 337.100	548.600
						6353.513	6353.513

Kd. :- Kusumdihi RF,

Dm. :- Dhenkiam RF

Rusimath Felling Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Tamra	Rusimath	RF	Rm. 6 Rm. 7 (b) (part)	530.161 467.057	997.218
2022-23	II	Tamra	Rusimath	RF	Rm. 7 (b) (bal) Rm. 8 (b) Rm. 9	110.872 246.885 436.700	794.457
2023-24	III	Tamra Jarda	Rusimath	RF	Rm. 10 Rm. 11 (b)	422.998 414.638	837.636
2024-25	IV	Jarda	Rusimath	RF	Rm. 12 (b) Rm. 13 Rm. 14	326.393 321.743 578.558	1226.694
2025-26	V	Jarda	Rusimath	RF	Rm. 15 Rm. 16	403.673 507.221	910.894
2026-27	VI	Tamra	Gurundia Gurundia	RF PRF	G. 2 G. 1 (part) G. 3 G. 1 (bal) G. (PRF) (part)	360.625 248.938 352.937 71.250 229.063	1262.813
2027-28	VII	Tamra	Gurundia Gurundia	RF PRF	G. 6 G. 5 (part) G. 7 G. PRF (part)	301.750 240.812 297.720 198.313	1038.595
2028-29	VIII	Tamra	Gurundia Gurundia	RF PRF	G. 4 G. 5 (bal) G. PRF (bal)	486.375 153.875 478.125	1118.375
2029-30	IX	Tamra	Rusimath	RF	Rm. 1 Rm. 2 Rm. 3	377.744 266.683 307.789	952.216
2030-31	X	Tamra	Rusimath Rushimath-II	RF PRF	Rm. 4 Rm. 5 Rm. PRF-II (Entire)	487.799 458.509 138.178	1084.486
						10223.384	10223.384

2.6.9 Method of executing felling: Annual coupes shall be demarcated in the winter season (October to December) of the year preceding the year in which it is due for working and will be handed over to the OFDC Ltd on the 1st of October in the year of felling. The felling will commence from October, will continue upto June & no felling will be allowed during the rainy season. The felling in annual coupes are to be done by the Odisha Forest Development Corporation (OFDC) Ltd.

2.6.9.1 Demarcation of annual coupes:

1. When the coupe line coincides with the compartment line, it is to be cleared at a width of 5 m. Trees already painted with double rings of white paint earlier on compartment line shall be repainted.

2. When the coupe line do not coincide with the compartment line, then a strip of 3 m width shall be cleared along the coupe line and stone cairns of size 90 cms X 60 cms X 60 cms (90 cms dia at bottom, 60 cms dia at top and height 60 cms) shall be erected at 300m, intervals along the coupe line. While clearing 3 m wide strip, all trees below 30 cm girth shall be felled. Trees of larger girth occurring along coupe line at visible distances shall be painted with double coaltar rings at the breast height.

3. While working annual coupes, each compartment should be worked as a separate lot so as to facilitate the required entries in the compartment histories. When the area of a particular annual coupe is quite large, then it may be divided into lots for convenience of working. when the lot line do not coincide with the compartment line, then the unmarked trees standing on lot line shall be marked with single coaltar ring at breast height at visible intervals.

4. Where the coupe line meets or crosses roads or boundary line then signboard is to be displayed on all such points. The sign board should show the name of

felling series, the coupe no. and year of working, name of Forest Block and number of the compartment.

5. Annual coupes shall be demarcated by an officer not below the rank of a trained Forester and shall be checked by Range Officer. All annual Coupes are to be demarcated as per Working Plan irrespective of availability of exploitable girth trees as coupe demarcation is essential not only for felling of trees but also for carrying out subsidiary silvicultural operations.

2.6.9.2 Marking rules: Marking shall be done after demarcation of the coupe in the year preceding the year in which it is due for working. All trees to be marked for felling shall be given two blazes approximately of size 15 cm x 15 cm, one at the breast height and the other as close to the ground as possible and marked with a departmental hammer and numbered serially and duly entered in the marking register. The blazes should be located on the sides opposites to each other.

(i) All trees above the exploitable girth class shall be marked for felling subject to allowed percentage of removal in the felling series.

(ii) Trees standing within 50 meter on either side of nallah bank shall not be marked for felling.

(iii) Trees standing within 50 meter radius of key habitat of wildanimals shall not be marked for felling.

(iv) Trees having nesting dens of arboreal animals and the hollow trees which are used by wild animals shall not be marked for felling.

(v) No trees shall be marked for felling within 20 meter along road side except for the removal of dead and uprooted trees.

(vi) No tree shall be marked for felling in eroded areas and in the areas having steep slopes except for the removal of dead and uprooted trees.

(vii) The guest species like: Mahul, Mango, Jamu, Char, Tentuli, Anla, Harida, Bahada, Bel, etc shall not be marked for felling

(viii) All dead, dying, seriously diseased, uprooted and fallen trees shall be marked for felling as the first chance. A tree whose top one third is already dead shall be treated as a dying tree.

(ix) A tree will be silviculturally available and marked for felling if:-

(a) Its removal does not create permanent gap in top canopy.

(b) It is not putting on appreciable increments.

(c) Its removal encourages growth of young regeneration

(d) Its removal does not affect the fauna of the areas.

(x) Trees selected for retention should be sound, dominant, well grown and vigorous. The reserved trees shall be painted with single white paint ring at breast height and at base and serially numbered in each coupe. The list of such trees shall be maintained in the compartment history and coupe register for silvicultural research purpose (plus tree/seed trees etc.).

(xi) If a tree is forked below breast height, it shall be taken as two trees instead of being counted as one tree. In all other case it should be taken as a single tree.

(xii) All climbers shall be cut prior to marking except the climbers of endangered species. The climbers should be cut at two places, one at base and other at the arm's reach.

(xiii) Trees standing on the blank patch having no established regeneration of any species underneath shall not be marked.

2.6.9.3. Improvement Marking: This marking is mainly intended for improvement of the crop without paying much importance for the purpose of yield. However, the following rules are prescribed.

- i. Marking of all dead; diseased and hollow trees irrespective of girth class and inclusive of even fallen and uprooted trees as well. However, some such standing trees shall be retained if required in wildlife point of view.
- ii. Marking of unsound or malformed trees irrespective of girth class which are unlikely to survive or which will further deteriorate before the next felling unless they are required for seed or soil or moisture conservation. Such marking and removal shall be subject to the following additional conditions:-
 - a. Such removal will not adversely affect the growth of the existing crop.
 - b. The marked tree forms part of the congested crop adhering to principle of thinning which necessitates its removal
 - c. There shall be sufficient existing saplings, poles or established regeneration to take its place.
 - d. Marking shall be done in a very conservative manner so that it does not result in fall of revenue

ମାର୍କିଂ ନିୟମାବଳୀ

କାର୍ଯ୍ୟ ହେବାକୁ ଥିବା ନିର୍ଦ୍ଦିଷ୍ଟ ବର୍ଷର ପୂର୍ବ ବର୍ଷ ନିର୍ଦ୍ଦାରିତ କୁପନ୍ ସୀମା ଚିହ୍ନଟ କଲାପରେ ନିମ୍ନଲିଖିତ ନିୟମାନୁଯାୟୀ ମାର୍କିଂ କରାଯିବ । ଯେଉଁ ଗଛ ଗୁଡ଼ିକ କଟାଯିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ, ସେହି ଗଛଗୁଡ଼ିକକଟାଯିବାପାଇଁମାର୍କିଂକରାଯିବ,ସେହିଗଛଗୁଡ଼ିକରଅନୁମାନିକ୧୫ସେ.ମି X ୧୫ସେ.ମିରଦୁଇଟିକଟାଚିହ୍ନ (ବ୍ଲେନ୍ଡ୍) କରାଯିବ। ସେଥି ମଧ୍ୟରୁ ଗୋଟିଏ ଛାତି ଉଚ୍ଚତାରରେ ଏବଂ ଅନ୍ୟଟି ଗଛ ମୂଳରରେ ଯଥା ସମ୍ଭବ ଭୂମି ନିକଟରେ ରହିବ। ଏହି ବ୍ଲେନ୍ଡ୍ ଗୁଡ଼ିକ ବିଭାଗୀୟ ହାମାର ଦ୍ଵାରା ଚିହ୍ନଟ କଲା ପରେ କ୍ରମ ଅନୁଯାୟୀ ସଂଖ୍ୟା ଦିଆଯିବ ଏବଂ ଉକ୍ତ ବ୍ଲେନ୍ଡ୍ ଦୁଇଟି ପରସ୍ପର ବିପରୀତ ପାର୍ଶ୍ଵରେ ରହିବ ।

ଲାଭଉପଯୋଗୀ ଗଛ କାଟିବା ନିୟମାବଳୀ

୧. କଟା ଉପଯୋଗୀ ଗୋଲାଇଥିବା ଗଛ ଗୁଡ଼ିକ ହିଁ କେବଳ କାଟିବା ପାଇଁ ଅନୁରକ୍ଷିତ ମଧ୍ୟରରେ ବର୍ଣ୍ଣିତ ସୀମା ମଧ୍ୟରରେ ହିଁ ମାର୍କିଂ କରାଯିବ ।
୨. କୌଣସି ନାଲର ଉଭୟ ପାର୍ଶ୍ଵର ୫୦ ମିଟର ଦୂରତା ମଧ୍ୟରରେ ଥିବା ଗଛଗୁଡ଼ିକ କାଟିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ ନାହିଁ।
୩. ଜନତୁମାନଙ୍କର ମୁଖ୍ୟ ବାସସ୍ଥଳୀଠାରୁ ୫୦ ମିଟର ବ୍ୟାସାରୂପ ମଧ୍ୟରରେ ଥିବା ଗଛଗୁଡ଼ିକ କାଟିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ ନାହିଁ ।
୪. ଜନତୁଗ୍ରହା ଭାବରେ ବ୍ୟବହୃତ ଗଛ ଏବଂ ଜନତୁମାନଙ୍କର ଆଶ୍ରୟସ୍ଥଳ ରୂପେ ବ୍ୟବହୃତ ଶୁଷ୍କ ଓ ଫମ୍ପା ଗଛଗୁଡ଼ିକ କଟାଯିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ ନାହିଁ ।
୫. ରାସ୍ତା କଡର ୨୦ ମିଟର ଦୂରତା ମଧ୍ୟରରେ ଥିବା ମଲା ଓ ଉପୁଡି ପଡିଥିବା ଗଛଗୁଡ଼ିକ ବ୍ୟତୀତ ଅନ୍ୟ କୌଣସି ଗଛ ମାର୍କିଂ କରାଯିବ ନାହିଁ।
୬. କ୍ଷୟଗ୍ରୀବ ଅଞ୍ଚଳ ତଥା ତୀବ୍ରତମ ଗତାଗତା ଅଞ୍ଚଳରେ ଶୁଷ୍କ ଓ ଉପୁଡି ପଡିଥିବା ଗଛର ଅପସାରଣ ବ୍ୟତୀତ ଅନ୍ୟ କୌଣସି ଗଛ କାଟିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ ନାହିଁ।
୭. ଗଛ ସମ୍ପର୍କରେ ମରି ନଥିଲେ କିମ୍ବା ଉପୁଡି ପଡି ନ ଥିଲେ ଅତିଥି ଜାତୀୟ ଗଛ ଯଥା – ମହୁଲ, ଆମ୍ବ, ଜମ୍ବୁ, ଚାର, ତନେତୁଳି, ଅଁଳା, ହରିଡା, ବାହାଡା ଇତ୍ୟାଦି ଗଛଗୁଡ଼ିକ ମାର୍କିଂ କରାଯିବ ନାହିଁ।
୮. କ୍ରମିକ ସଂଖ୍ୟା ୨, ୩ ଓ ୪ ରେ ବର୍ଣ୍ଣିତ ସ୍ଥାନମାନଙ୍କରେ ଥିବା ଗଛ ବ୍ୟତୀତ, ସମସ୍ତ ମଲା ଓ ଉପୁଡି ପଡିଥିବା ଗଛଗୁଡ଼ିକ କାଟିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ।
୯. କୌଣସି କୁପ୍ ରେ ସର୍ବାଧିକ କଟାଯିବାକୁ ଥିବା ଗଛ ଅନୁରକ୍ଷିତ ରେ ବର୍ଣ୍ଣିତ ଉତ୍ପାଦନ ସାରଣୀର ସ୍ତମ୍ଭ-୧୧ ଅନୁଯାୟୀ ନିୟନ୍ତ୍ରିତ ହେବ ।

୧୦. ଗଛ କଟାଯିବାପାଇଁ ମାର୍କିଂ କରାଯାଇଥିବା ଗଛ ଗୁଡ଼ିକର ସ୍ଥିତି ବନ ବିଜ୍ଞାନର ନିୟମ ସମ୍ମତ ହେବା ଆବଶ୍ୟକ ।
- (କ) ଏମାନଙ୍କର ଅପସାରଣ ଜଙ୍ଗଲର ଆବରଣରେ ସ୍ୱାସ୍ଥୀ ଶୂନ୍ୟତା ସୃଷ୍ଟି କରୁ ନଥିବ ।
- (ଖ) ଏହି ଗଛଗୁଡ଼ିକର ମହତ୍ତ୍ୱପୂର୍ଣ୍ଣ ବୃଦ୍ଧିର ସମ୍ଭାବନା ନ ଥିବା ଉଚିତ ।
- (ଗ) ଏମାନଙ୍କର ଅପସାରଣ ଚାରାଗଛଗୁଡ଼ିକ ବଢ଼ିବାର ସହାୟକ ହେଉଥିବ ।
- (ଘ) ଏମାନଙ୍କର ଅପସାରଣ ଜୀବଜନ୍ତୁଙ୍କ ପ୍ରତି କୌଣସି ଆଘାତ ସୃଷ୍ଟି କରୁ ନଥିବ ।
୧୧. କାଟିବାକୁ ନ ଥିବା ଗଛଗୁଡ଼ିକ ଉତ୍ତମ ଏବଂ ବହୁଳଭାବେ ବଢୁଥିବ ଏବଂ ମୂଲ୍ୟବାନ ଗଂଗାଲରେ ବୃଦ୍ଧି କରିବାର ସକ୍ଷମ ହେଉଥିବ ।
୧୨. ଲଂପ ପାଇ ଯାଇଥିବା ଲଘୁ ବୃକ୍ଷୀତ ଅନ୍ୟ ଲଘୁ ଗୁଡ଼ିକୁ ମାର୍କିଂ ସମୟରେ କାଟିନିଆଯିବା ଉଚିତ । ଏହି ଲଘୁ ଗୁଡ଼ିକ ଦୁଇଟି ସ୍ଥାନରେ ଯଥା – ମୂଳରେ ଏବଂ ହାତ ପାଆନ୍ତାରରେ କଟାଯିବ ।
୧୩. ମାର୍କିଂ ଶେଷ ହେବା ସଂଗତ ସଂଗତ ମାର୍କିଂ ଅଫିସର (ଯିଏ କି ରେଣ୍ଡେ ଅଫିସରଙ୍କ ପାହ୍ୟାଠାରୁ ନିମ୍ନ ପାହ୍ୟାର ହୋଇ ନ ଥିବେ) ଏ ବିଷୟ ବନଖଣ୍ଡଅଧିକାରୀ ଡ଼ଙ୍କ ଅବଗତି ନିମନ୍ତେ ଜଣାଇବେ । ବନଖଣ୍ଡଅଧିକାରୀ ନିଜେ କିମ୍ବା ସହାୟକ ବନଖଣ୍ଡଅଧିକାରୀ ଏହି ରିପୋର୍ଟ ପାଇବାର ଏକ ସପ୍ତାହ ମଧ୍ୟରେ ମାର୍କିଂ ତଦାରଖ କରିବେ । ମାର୍କିଂ ଅଫିସର ଉକ୍ତ ତଦାରଖର ଏକ ସପ୍ତାହ ମଧ୍ୟରେ ତୁରନ୍ତ ମାର୍କିଂ ତାଲିକା ପ୍ରଦାନ କରିବେ ।

ଉପାଦେୟ ମାର୍କିଂ ନିୟମାବଳୀ

- (୧) ମରି ଯାଇଥିବା ଓ ମରିବାକୁ ଯାଉଥିବା ଏବଂ ଉପୁଡ଼ି ପଡ଼ିଥିବା ଗଛ ବୃକ୍ଷୀତ ଅନ୍ୟ (କାଟିବା ଉପଯୋଗୀ ହେବାକୁ ଯାଉଥିବା) ଗଛ ଗୁଡ଼ିକୁ ମାର୍କିଂ କରାଯିବ ନାହିଁ ।
- (୨) ଛାତି ଉଚ୍ଚତା ଗଂଗାଲରେ ୬୦ ସେ.ମି.ରୁ କମ୍ ଥିବା ଅନ୍ୟ ସମସ୍ତ ଗଛଗୁଡ଼ିକ ଯାହାକି ମୁଖ୍ୟ କିମ୍ବା ଗଂଗା ଗଛଗୁଡ଼ିକର ବୃଦ୍ଧିରେ ପ୍ରତିବନ୍ଧକ ସୃଷ୍ଟି କରୁଥିବା କିମ୍ବା ନିକଟ ଭବିଷ୍ୟତରେ ପ୍ରତିବନ୍ଧକ କରିବାକୁ ଯାଉଥିବା, ସେହି ପରି ଗଛଗୁଡ଼ିକୁ କାଟିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ ।
- (୩) ଛାତି ଉଚ୍ଚତା ଗଂଗାଲରେ ୬୦ ସେ.ମି.ରୁ କମ୍ ଥିବା ସମସ୍ତ ଗଂଗା ଗଛ ଗୁଡ଼ିକ ଯାହାକି ଦୃଢ଼ ସ୍ଥିତି ମୁଖ୍ୟ ଗଛଗୁଡ଼ିକର ବୃଦ୍ଧିରେ ବାଧା ଦେଉଥିବ କିମ୍ବା ନିକଟ ଭବିଷ୍ୟତରେ ବାଧା ଦେବାକୁ ଯାଉଥିବ, ସେହିପରି ଗଛଗୁଡ଼ିକୁ କାଟିବା ପାଇଁ ମାର୍କିଂ କରାଯିବ ।

2.6.9.4 Execution of marking and felling

(i) Marking should be carried out by a trained Forester or Range Officer under proper supervision of the Assistant Conservator of Forests.

(ii) On completion of marking, the Forest Range Officer after proper checking of marking shall intimate the Divisional Forest Officer. There after, within a week of such intimation, the Divisional Forest Officer or Assistant Conservator of Forest deputed by him shall inspect the marking. The marking officer shall submit the final marking list within a week from the date of such inspection..

(iii) The method of disposal of trees marked for felling shall be as per Chapter - XIV of the Orissa Forest Department Code, 1979 as modified by Government from time to time.

(iv) Felling and extraction in any annual coupe shall be allowed during the lease year i.e. from 1st October to 30th June . Felling of trees will be done by saw and not by axe. No felling, logging, passing and dragging shall be allowed between the period of 1st July to 30th September. Divisional Forest Officer shall allow extension of time only after physical verification of previous years incomplete coupes. Marked trees shall be felled as close to the ground as possible leaving the lower blazed with the digitized impression intact for post felling inspection.

(v) Trees shall be lopped before felling to avoid damage to the regeneration and standing crops. The trees should be felled towards upper hill slope in hilly coupes.

(vi) Firewood billets shall have to be stacked along the extraction path in a standard size of 6' x 3' x 3' or 12' x 3' x 3'. Felling work undertaken, number of lots formed, detailed passing list, deviations if any must find place in the compartment history.

(vii) Works undertaken, number of lots formed, detailed passing list, deviations if any must be mentioned in the compartment history and control forms.

2.6.10. Subsidiary Silvicultural Operations: Subsidiary silvicultural operations shall be taken up in the year following the main felling. This departmental operation shall be carried out over the entire coupe area except in very degraded areas and steep slopes. In order to take up subsidiary silvicultural operation systematically, an annual action plan shall be prepared in advance along with treatment plan and treatment map.

The following operations are recommended.

- (i) All marked trees not felled by the OFDC Ltd. shall be felled and removed from the annual coupe.
- (ii) All these trees damaged in the main fellings without any scope for survival, shall be felled.
- (iii) All the seriously diseased trees and high stumps shall be cut.
- (iv) All climbers left during marking whose existence is not desirable silviculturally shall be cut.
- (v) All high stumps should be cut flush to the ground to promote coppicing.
- (vi) Soil and moisture conservation measures required shall be assessed. The soil conservation measures such as gully plugging, contour bunding, dry stone packing, construction of check dams etc. shall be carried out.
- (vii) Blank areas available (more than half hectare of any blank patch can be considered as blank area) shall be planted with the local indigenous species under Assisted Natural Regeneration.

2.6.11. Regeneration: - This Working Circle consists of mainly Sal bearing areas. Most of the Forest Blocks under this Working Circle are having good and fair natural regeneration. Apart from these, there are some pockets which are having poor regeneration or no regeneration. These pockets are widely distributed throughout the Working Circle. All such areas are to be restocked by planting of indigenous species on the gaps and tending the existing crops by Assisted Natural Regeneration after completion of coupe working. The status of regeneration has been detailed in Chapter 4 of Part I. Areas which are infested with invasive weeds like Eupatorium, Lantana spp., etc are to be identified and after completion of coupe working, these weeds are to be eradicated by uprooting before they get flowered.

2.6.12. Associated Regulations and Measures:-

The following are the associated regulations and measures.-

2.6.12.1. Grazing:-Annual coupes shall be closed to grazing for a minimum period of 5 years after the main felling. The rest of the areas of the respective felling series will be kept open for grazing subject to following restrictions.

- i. Sheep and goat shall not be allowed to graze.
- ii. Number of cows and bullocks should be regulated at the rate of 1.5 to 2.5 per hectare respectively.
- iii. Lopping of branches shall be strictly prohibited.
- iv. If any area is required to be closed to grazing on silvicultural reasons, then it should be done by proper local notification.

2.6.12.2. Fire Protection: - Coupes shall be protected against fire for all time to come after the completion of main felling. The worked out areas should be rigidly protected from the fire hazard for a period of at least 5 years. For taking suitable fire protection measures, the provision of rule 283 of Orissa Forest Department Code and Orissa Forest (Fire Protection) Rules should be followed. Efforts should be taken to maintain coupe lines as fire lines every year.

2.6.12.3 Rights and concessions: - Rights and concessions shall be regulated as per existing rules and regulations prevailing.

2.6.12.4. Establishment of Permanent Plots: There is no permanent sample plot in the Division. Establishment of Permanent Sample Plots shall be made which should be used for measurement of annual increase in growth of timber species like Sal, its associates and other parameters like biodiversity, regeneration, carbon sequestration, etc.

2.6.13. Felling and regeneration as per Supreme Court's order dated 22.09.2020 :

The Judgement of Hon'ble Supreme Court of India dated 22.9.2020 orders to ensure regeneration should commensurate with the felling of trees, while devising Working Plans.

In case of Bonai Division, felling of trees as per Working Plan prescriptions and number of trees planted during the last Working Plan period is as furnished in the following table 2.6.13.1

Table 2.6.13.1 - Felling and regeneration as per Supreme Court Judgement dated 22.9.2020 in Bonai Division (Expired Working Plan and Working Schemes)			
Year	No. of trees felled as per Working Plan prescription	No. of seedlings planted in Nos.	Remarks
1	2	3	4
1997-98	No working due to moratorium on felling of trees	15,000	
1998-99	No working due to moratorium on felling of trees	86,685	
1999-2K	No working due to moratorium on felling of trees	8,016	

2000-01	No working due to moratorium on felling of trees	Nil	
2001-02	No working due to moratorium on felling of trees	2,00,000	
2002-03	No working due to moratorium on felling of trees	1,21,535	
2003-04	No working due to moratorium on felling of trees	Nil	
2004-05	No working due to moratorium on felling of trees	9,79,524	
2005-06	8,478	1,83,700	
2006-07	8,303	9,816	
2007-08	10,317	4,12,000	
2008-09	10,215	10,22,828	
2009-10	8,062	4,46,900	
2010-11	6,484	32,91,438	
2011-12	8,150	6,23,085	
2012-13	8,839	6,13,126	
2013-14	9,106	10,73,075	
2014-15	12,515	27,86,762	
2015-16	12,256	24,02,956	
2016-17	10,750	10,40,445	
2017-18	15,098	5,33,958	
2018-19	11,444	5,28,608	
2019-20	12,085	5,10,464	
2020-21	7,180	6,65,977	
Total:-	1,59,282	1,75,55,898	

Also in the presently proposed Working Plan, maximum number of trees which can be felled in each year and number of plants proposed to be planted in the corresponding year has tabulated in the following table 2.6.13.2

Table 2.6.13.2 Felling and regeneration as per Supreme Court Judgement dated 22.9.2020 in Bonai Division			
Year	Maximum number of trees which can be felled as per revised Working Plan	Average No. of seedlings proposed to be planted in each year during the plan period	Remarks
1	2	3	4
2021-22	18,495	3,40,000	
2022-23	18,086	3,40,000	
2023-24	19,481	3,40,000	
2024-25	21,482	3,40,000	
2025-26	19,063	3,40,000	
2026-27	19,541	3,40,000	
2027-28	18,556	3,40,000	
2028-29	19,955	3,40,000	
2029-30	19,652	3,40,000	
2030-31	19,416	3,40,000	
Total:-	1,93,727	38,31,270	

From the above discussion, it is evident that prescribed felling as per the Working Plan commensurate with proposed regeneration and hence in compliance with the order of Hon'ble Supreme Court of India.

CHAPTER – 3

PROTECTION WORKING CIRCLE

3.1 Protection Working Circle:-Protection Working Circle has been prescribed as an independent Working Circle in this Revised Working Plan for protection of the ecologically fragile areas, catchment areas of perennial streams and steep precipitant slopes with high altitude following the same management principles as have been followed in the previous plan.

3.2 General Constitution of the Working Circle:-

This working circle includes the forest areas which could not be allotted to any other working circle owing to their special nature, requiring very specific silvicultural treatment or administrative measures, such as

- (i) Ecologically fragile areas covering entire Khandadhar R.F.
- (ii) Areas under active encroachment for cultivation and habitation purposes
- (iii) Areas subjected to shifting cultivation in the recent past or currently under this practice.
- (iv) Areas which have already been deforested for the purpose of resettlement of the displaced people but yet to be dereserved.

A total of 16 nos. of forest blocks covering an area of 7558.700 ha. have been allotted to Protection Working Circle, the details of which is given in following **Table No.3.2.1**

Table No.3.2.1- Forest Blocks and Compartment Alloted to Protection Working Circle.						
Sl. No	Range	Name of the Forest Block	Area in ha. as per Govt. Notification (in ha.)	Area in ha. as computed in previous Plan	Compt./Sub-Compt included	Area in ha. to be included under PrWC
1	2	3	4	5	6	7
1	Barsuan	AmrudiRF	2440.416	2408.620	3(c),4(c)	173.813
2	Jarda	Ulsura RF	1420.477	1400.061	1(a)	12.869

3	Barsuan	Khandadhar RF	927.559	927.560	Part	674.846
4	Sole	BalaiRF	3466.693	3416.313	7(a),8(a)	120.375
5	Sole	Kunjar RF	4946.985	4924.687	2(a),3(a),4(a)	333.644
6	Sole	Solguda RF	2730.068	2730.068	4(a),6(a),7(a)	224.860
7	Jarda	Rushimath RF	6741.533	6712.567	7(a),8(a), 11(a),12(a)	46.264
8	Tamra	Dhenkiam RF	6553.233	6398.358	3(a),5(a), 6(a),7(a) 8(a), 16(a),17(a), 18(a),20(a), 21(a),22	724.251
9	Tamra	Kusumdihi RF	5445.973	5277.124	9(a),11(a)	49.499
10	Koira/ Barsuan	Toda RF	15722.869	15703.988	2(a),8(a), 11(a),12(a), 17(a),25(c), 29(a),30(b), 44(c),46(b), 47(b)(bal)	995.970
11	Koira	Bhabanipahar RF	370.295	370.295	Part	204.595
12	Koira	Rakshi-I RF	1745.884	1796.289	8	355.169
13	Kulipos / Barsuan	Nagaria PRF	7709.429	9684.811	1(a), 2(a), 3(a), 4(a) 5(a), 6(a), 7(a), 8(a), 9(a), 10(a), 11(a), 12(a), 13(a), 15(a), 16(a)	3157.686
14	Barsuan	Sarkunda PRF	6434.641	4950.313	8(c), 1(c), 12(a), 3(a)	156.944
15	Koira	Khajurdihi PRF	3474.301	3634.313	1 (a), 2 (a), 3 (a), 6 (a)	323.059
16	Koira	Toda - V PRF	4.856	Not Calculated earlier	Entire	4.856
	Total :-					7558.700

3.3. General Characteristics of Vegetation: These areas have little vegetation except in the cooler aspect and the crop is somewhat open and covers many exposed hill tops. At places, this is due to edaphic factors rather than due to climatic conditions. Sal is the dominant species and other important associates of Sal available are Asan, Dhaura, Bija, Jamu, Mai, Amba, Anla, Bahada, Kasi, Kumbhi and Sidha, etc. Due to rugged nature of the ground, open areas of this region are quite susceptible to soil erosion. Areas under active encroachment are devoid of forest vegetation. Infestation of invasive weeds is seen at some places and the magnitude is high in some RFs and PRFs. The interior forests in the higher ridges are vulnerable to shifting cultivation. Regular biotic interference has led to decrease in vegetative cover which is one of the reasons of high run-off, rapid soil erosion and at times flash floods in low lying areas. Majority of the forest blocks included here are the ones which have been badly affected due to regular removal of biomass. Forest blocks proposed to be worked under this working circle need intensive protection measures so that pressure of biomass removal will be reduced substantially.

3.4 Protection Series: For implementation of prescriptions of the Protection Working Circle, six nos of Protection Series have been formed taking the Forest Blocks, Compartments, Sub-Compartments allotted to this Working Circle. These Protection Series are:-

- i. Khandadhar Protection Series,
- ii. Kunjar Protection Series,
- iii. Dhenkiam Protection Series,
- iv. Toda Protection Series
- v. Nagaria Protection Series
- vi. Bhawanipahar Protection Series.

3.5 Areas Allotted to Protection Series: Areas from various forest blocks allotted to different Protection Series and extent of the series are shown in the **Table in Para 3.5.1.**

Table 3.5.1 : Areas allotted to various protection series.			
Range	Name of Protection Series	R.F. & P.R.F. blocks	Total area of Reh. Series (in ha.)
1	2	3	6
Barsuan	Khandadhar	Khandadhar RF	861.528
Barsuan		Amrudi RF	
Jarda		Ulsura RF	
Sole	Kunjar	Balai RF	678.879
Sole		Kunjar RF	
Sole		Solguda RF	
Jarda	Dhenkiam	Rushimath RF	820.014
Tamra		Dhenkiam RF	
Tamra		Kusumdihi RF	
Koira/ Barsuan	Toda	Toda RF	995.970
Kuliposh/ Barsuan	Nagaria	Nagaria PRF	3157.686
Koira	Bhawanipahar	Bhabanipahar RF	1044.623
Koira		Rakshi-I RF	
Barsuan		Sarkunda PRF	
Koira		Khajurdihi PRF	
Koira		Toda - V PRF	
			7558.700

3.6 Blocks and Compartments: Forest Blocks, Compartments and Sub-Compartments allotted to different Protection Series and extent of the series are shown in the **Table 3.6.1.**

Table 3.6.1 : Blocks, compartments and sub compartments allotted to different Protection Series					
Range	Name of Protection Series	R.F. & P.R.F. blocks	Compartment & Sub-compartment	Area (in ha.)	Total area of Reh. Series (in ha.)
1	2	3	4	5	6
Barsuan	Khandadhar	Khandadhar RF	Part	674.846	861.528
Barsuan		Amrudi RF	3(c),4(c)	173.813	
Jarda		Ulsura RF	1(a)	12.869	
Sole	Kunjar	Balai RF	7(a),8(a)	120.375	678.879
Sole		Kunjar RF	2(a),3(a),4(a)	333.644	
Sole		Solguda RF	4(a),6(a),7(a)	224.860	
Jarda	Dhenkiam	Rushimath RF	7(a),8(a), 11(a),12(a)	46.264	820.014
Tamra		Dhenkiam RF	3(a),5(a), 6(a),7(a) 8(a), 16(a),17(a), 18(a),20(a), 21(a),22	724.251	
Tamra		Kusumdihi RF	9(a),11(a)	49.499	
Koira/ Barsuan	Toda	Toda RF	2(a),8(a), 11(a),12(a), 17(a),25(c), 29(a),30(b), 44(c),46(b), 47(b)(bal)	995.970	995.970

Kuliposh/ Barsuan	Nagaria	Nagaria PRF	1(a),2(a),3(a),4(a) 5(a)6(a)7(a),8(a) 9(a),10(a), 11(a), 12(a),13(a), 15(a),16(a)	3157.686	3157.686
Koira	Bhawanipahar	Bhabanipahar RF	Part	204.595	1044.623
Koira		Rakshi-I RF	8	355.169	
Barsuan		Sarkunda PRF	8(c),11(c), 12(a),13(a)	156.944	
Koira		Khajurdihi PRF	1(a),2(a),3(a),6(a)	323.059	
Koira		Toda - V PRF	Entire	4.856	
		Total :-			7558.700

Areas of all RF & PRF blocks have been computed from the latest topographical sheets of scale 1:50,000 in the previous Plan. Computed area of most of the RF & PRF blocks do not tally with the corresponding notified areas as maintained in the records of Division office. The computed area has been taken into account for the purpose of formation of annual protection coupes. However, Notified area of all RF & PRF blocks as maintained in the records of Division office stands as it is. In the previous Plan, Some compartments of few RF blocks were further divided into sub-compartments. Compartments and sub-compartments formed in the previous plan have been retained. Formation of compartments and its delineation in topographical maps are based on conspicuous topographical features only .

3.7. Special Objectives of Management: Since, areas included in this Working Circle are in immediate need of complete protection measures coupled with improvement of vegetative cover, the special objectives of management are as follows:

- i. To prevent further degradation of delicate and eco-sensitive areas and stabilize these areas as ecologically stable by maintaining adequate vegetative cover.

- ii. To rehabilitate the forest area subjected to encroachment or shifting cultivation by adequate social, administrative and silvicultural measures.
- iii. To augment natural regeneration through strong protection measures and minimizes biotic interferences.
- iv. To protect these forests from illicit removal of biomass, fire and grazing by providing strict vigil against the same by engaging anti-smuggling squads and fire fighting squads.
- v. To maintain the boundaries of the forest blocks regularly with proper posting of pillars.

3.7.1 Analysis of Crop: Enumeration of forest species were conducted in all the Forest Blocks by Stratified Random Sampling Method. Number of trees available in different girth classes in different Forest Blocks, Compartments have been estimated. In the Forest Blocks coming under Protection Working Circle, Sal is the dominant species. Due to biotic interference and poor edaphic condition, crop density is less than 0.4. Regeneration status is poor to no regeneration.

3.7.2 Silvicultural System: - Since forest areas included in this Working Circle need to be protected and restocked, the silvicultural system prescribed is Protection with rehabilitation measures. Retention of dead and dying trees is suggested from wildlife management point of view. The area shall be rigidly protected from illegal biomass removal. Areas of forest blocks on steep precipitous slopes and eco-fragile areas would be specially protected to ensure that there is no loss of vegetation or soil cover so as to prevent further degradation of delicate and eco-sensitive areas and stabilize these areas as ecologically stable.

3.7.3 Protection Cycle: For silvicultural treatment of the forest areas, Protection Cycle of 10 years has been prescribed to synchronise with the Plan period. Routine forestry operations like maintenance of block boundaries to prevent encroachment, repair of forest roads to ensure un-interrupted patrolling, deployment of anti smuggling squads to check illegal activities, prevention and protection of fire by deploying Fire Fighting Squads have been given priority.

3.7.4 Annual Coupes of Protection Series: For implementation of protection measures, rehabilitation and other silvicultural measures, the forest areas have been divided into 10 annual Protection areas in each Protection Series, which is shown in the following **Table No.3.7.4.1**

Table No.3. 7.4.1							
i. Protection Working Circle :-Toda Protecton Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	T0da	RF	2(a) (Part)	100.000	100.000
2022-23	II	Barsuan	T0da	RF	2 (a) (bal) 8 (a)	44.563 50.125	94.688
2023-24	III	Koira	T0da	RF	11 (a) 12 (a) Part	45.812 54.188	100.000
2024-25	IV	Koira	T0da	RF	12 (a) (bal) 17 (a)	87.187 14.569	101.756
2025-26	V	Koira	T0da	RF	25 (c) 29 (a) (Part)	11.688 100.125	111.813
2026-27	VI	Koira	T0da	RF	29 (a) (bal) 30 (b)	50.000 97.000	147.000
2027-28	VII	Barsuan	T0da	RF	44(c) 46 (b) (Part)	34.938 65.062	100.000
2028-29	VIII	Barsuan	T0da	RF	46 (b) (bal)	66.313	66.313
2029-30	IX	Barsuan	T0da	RF	47 (b) (Part)	100.000	100.000
2030-31	X	Barsuan	T0da	RF	47(b) (bal)	74.400	74.400
						995.970	995.970

ii. Protection Working Circle :-Khandadhar Protection Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Khandadhar	RF	Part	80.000	80.000
2022-23	II	-do-	Khandadhar	RF	Part	80.000	80.000
2023-24	III	-do-	Khandadhar	RF	Part	80.000	80.000
2024-25	IV	-do-	Khandadhar	RF	Part	80.000	80.000
2025-26	V	-do-	Khandadhar	RF	Part	80.000	80.000
2026-27	VI	-do-	Khandadhar	RF	Part	80.000	80.000
2027-28	VII	-do-	Khandadhar	RF	Part	80.000	80.000
2028-29	VIII	-do-	Khandadhar	RF	Balance	114.846	114.846
2029-30	IX	-do-	Amrudi	RF	3c, 4c (Part)	100.000	100.000
2030-31	X	-do-	Amrudi	RF	4c (bal)	73.813	86.682
		Jarda	Ulsura	RF	1(a)	12.869	
						861.528	861.528

iii. Protection Working Circle :-Kunjar Protection Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Sole	Kunjar	RF	2(a), 3(a), (Part)	70.000	70.000
2022-23	II	Sole	Kunjar	RF	3 (a) (Part)	70.000	70.000
2023-24	III	Sole	Kunjar	RF	3 (a) (bal) & 4	70.000	70.000
2024-25	IV	Sole	Kunjar	RF	4 (a) Part	70.000	70.000
2025-26	V	Sole	Kunjar	RF	4 (a) (bal)	53.644	53.644
2026-27	VI	Sole	Sulguda	RF	4(a),6(a) (Part)	75.000	75.000
2027-28	VII	Sole	Sulguda	RF	6 (a) (bal),	75.000	75.000
2028-29	VIII	Sole	Sulguda	RF	7 (a) (bal)	74.860	74.860
2029-30	IX	Sole	Balai	RF	7(a)	46.437	46.437
2030-31	X	Sole	Balai	RF	8 (a)	73.938	73.938
						678.879	678.879

iv. Protection Working Circle :- Dhenkiam Protection Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Tamra	Dhenkiam	RF	3(a) 5(a) (Part)	70.250 19.750	90.000
2022-23	II	Tamra	Dhenkiam	RF	5 (a) (bal) 6 (a)	42.375 28.500	70.875
2023-24	III	Tamra	Dhenkiam	RF	7 (a), 8 (a) & 16 (a)	34.357 55.643	90.000
2024-25	IV	Tamra	Dhenkiam	RF	17(a) (bal)	85.977	85.977
2025-26	V	Tamra	Dhenkiam	RF	18 (a) 20 (a) (Part)	53.624 36.188	89.812
2026-27	VI	Tamra	Dhenkiam	RF	20 (a) (bal) 21 (a) (Part)	66.000 23.624	89.624
2027-28	VII	Tamra	Dhenkiam	RF	21 (a) (bal) 22 (Part)	85.088 22.875	107.963
2028-29	VIII	Tamra	Dhenkiam	RF	22 (bal)	100.000	100.000
2029-30	IX	Tamra	Kusumdihi	RF	9(a),11(a)	49.499	49.499
2030-31	X	Jarda	Rushimath	RF	7(a),8(a), 11(a),12(a)	46.264	46.264
						820.014	820.014

v. Protection Working Circle :-Nagaria Protection Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Nagaria	PRF	1(a) (Part)	320.000	320.000
2022-23	II	Barsuan	Nagaria	PRF	1 (a) (bal) 2 (a)	50.000 247.813	297.813
2023-24	III	Kuliposh	Nagaria	PRF	3 (a) (Part)	320.000	320.000
2024-25	IV	Kuliposh	Nagaria	PRF	3 (a) (bal) 4 (a)	33.749 289.874	323.623
2025-26	V	Kuliposh	Nagaria	PRF	5 (a) 6 (a) 7 (a)	159.124 133.125 47.688	339.937
2026-27	VI	Kuliposh	Nagaria	PRF	8 (a) 9 (a) (Part)	179.938 140.500	320.438
2027-28	VII	Kuliposh	Nagaria	PRF	9 (a) (Part)	320.000	320.000
2028-29	VIII	Kuliposh	Nagaria	PRF	9 (a) (bal) 10 (a) 11 (a)	44.000 135.875 141.063	320.938
2029-30	IX	Kuliposh	Nagaria	PRF	12(a) 13(a) 15(a) (Part)	70.125 83.250 146.625	300.000
2030-31	X	Kuliposh	Nagaria	PRF	15 (a) (bal) 16 (a)	182.063 112.874	294.937
						3157.686	3157.686

vi. Protection Working Circle:-Bhawanipahar Protection Series							
Year of felling	Coupe No.	Range	Forest block	Status	Compartment & Sub-Compartment	Area (in Ha.)	Total area of annual coupe (in Ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Bhabanipahar	RF	Part	100.000	100.000
2022-23	II	Koira	Bhabanipahar	RF	Balance	104.595	104.595
2023-24	III	Koira	Rakshi-I	RF	8 (Part)	120.000	120.000
2024-25	IV	Koira	Rakshi-I	RF	8 (Part)	120.000	120.000
2025-26	V	Koira	Rakshi-I	RF	8 (Bal)	115.169	115.169
2026-27	VI	Barsuan	Sarkunda	PRF	8(c), 11(c)	67.603	67.603
2027-28	VII	Barsuan	Sarkunda	PRF	12 (a), 13 (a)	89.341	89.341
2028-29	VIII	Koira	Khajurdihi	PRF	1(a), 2(a), 3 (a) (Part)	71.063 23.088	94.151
2029-30	IX	Koira	Khajurdihi	PRF	3 (a) (bal)	100.000	100.000
2030-31	X	Koira	Khajurdihi	PRF	6 (a)	128.908	133.764
			Toda - V	PRF	Entire	4.856	
						1044.623	1044.623

3.7.5 Methodology and Execution of Operation:

3.7.5.1 Demarcation of Annual Coupes and preparation of Annual Plan of Action

- i. In order to execute the protection measures, six nos of protection series have been constituted and each protection series has been divided into 10 annual coupes to facilitate systematic protection measures, rehabilitation measures and silvicultural operations. The annual coupe shall be attended to as per the sequence prescribed in the plan and presented in **Table No 3.7.4.1**. Since the area allotted to this working circle consists of relatively small isolated patches, each annual coupe shall be demarcated in the year due for operation. The traditional method of demarcating annual coupes and their compartments or

sub compartments cannot be applied in this working circle. The annual coupes of all the Protection Series have been depicted in the Management Map.

- ii. Signboards, showing the names of the forest block, Working Circle, Compartment/Sub-Compartment No., area and year shall be displayed on prominent and easily identifiable trees.
- iii. The Divisional Forest Officer shall ensure preparation of an annual action plan with a calendar of operations before execution of works.

3.7.5.2 Forest Protection Measures

- i. No grazing and illegal removal of forest produce shall be allowed from the protection coupes.
- ii. All forests of this Working Circle shall be strictly protected against illicit felling, forest fires and other biotic interferences. Anti smuggling squads at vulnerable points shall be formed by deployment of manpower from other less important areas besides engagement of protection watchers. The Divisional Forest Officer shall evolve the modalities for its effective working.
- iii. In theft prone and problematic beats / Sections, the staff shall be strengthened. The forest cases detected shall be firmly dealt without allowing these to remain pending at the FG /Forester /Range Officer Level for too long period.
- iv. The concerned Range Officer/ Divisional Forest Officer shall periodically monitor the performance of each Beat Forest Guard and Section Forester. The Divisional Forest Officer shall review the performance of each Range/Section/ Beat at least once in six months with regard to the protection efforts, monitor illicit felling and take required remedial measures as are considered necessary and feasible. For better coordination, the communication network including VHF network shall be strengthened and made effective.
- v. The field forest staff shall take steps to control encroachments in the forests and take steps to evict encroachers in the annual treatment area. Resurvey, demarcation and construction/repair of boundary pillars according to provisions of Rule 168 and 169 of O.F.D. Code, 1979 is absolutely necessary to check this growing problem. Cases of encroachment shall be firmly dealt with. The prosecution cases filed in the court should be pursued vigorously. A close vigil

will be maintained about the activities of Forest Right holders who have settled and got their habitation inside the forest regularized under FRA, 2006 so that they do not encroach for fresh forest land. Any instance of practicing podu cultivation on the steep slopes will be dealt with heavy hand without mercy and Podu cultivators are to be rehabilitated in consultation with the Administrative Authorities.

- vi. The success of protection efforts should be monitored with regard to the number and nature of forest offence cases, encroachers evicted, timber and vehicle seized and the manner in which the booked offence cases are investigated and contested in the appropriate courts of law.
- vii. The Divisional Forest Officer and his subordinate officers shall constantly pursue the offence cases in the competent courts of law so as to ensure greater rate of conviction. These measures will have long lasting effect even on the overall protection in the entire Division as well.
- viii. Use of modern tools in protection activities will be ensured. Use of GPS PDA devices shall be ensured in patrolling and the patrolling data uploaded in the website shall be used for monitoring of protection activities. GIS tools shall also be effectively incorporated in ensuring protection activities.

3.7.5.3 Soil and Water Conservation Measures: Different mechanical measures are required to be taken to arrest the flow of water and recharge the aquifers and retain the soil and moisture of the area. Along the hilly terrains usually contour trenching is done at areas having steep slope of more than 10° slope by digging of trench of suitable size and the length varying 5 to 6 metres in a staggered manner, the interval from line to line being approximately the same distance as from trench to trench in a line. The dug out earth will be heaped in the down hill side and then planting of soil binding species will be taken up on the berm of the trench. These include species like *Prosopis specegera*, *Zyziphus jujuba*, *Azadirachta indica*, *Dalbergia Sissoo*, etc.

- i. **Contour bundling:** In areas having gentle slope of less than 10° slope, contour bunding is provided to arrest the runoff and help water conservation. A series of such bunds will be constructed along the contour

by digging earth in a staggered manner. The dimension of the cross section will depend upon the budget allocation but care should be taken to see that the height of the bund is not made unnecessarily more than the requirement which must be site specific and proper austerity measures taken on this score.

- ii. **Gully plugging:** All gullies on the hill slopes will be plugged by construction of bunds on it and providing diversion channel at distances of at least 2 to 3 metres away from the gully head so that water can drain off without any further erosion. Over hanging gullies will be made into slopes of 1: 2 followed by plantation of Sabai grass or Agave at closed species. Different types of bunds will be constructed depending upon the size of the gully and usually it should be of the following types: (1) Brush wood dam, (2) Live hedge.
- iii. **Check dams:** If the size of the gully is large, then check dam will be constructed with brush wood or dry rubble and boulders across the streams in series so that the top of the structure on the down stream and bottom of the structure on up stream will be at the same level. It will be commenced from the head of the stream down ward.

3.7.5.4 Silvicultural Operation: The blank patches are to be regenerated by artificial regeneration under Assisted Natural Regeneration with indigeneous species.

3.7.5.5 FOREST ROAD NETWORK:

- i. Forest roads/tracks should be maintained by providing drains on either side. The side drains should be periodically cleared to allow surface runoff smoothly. Cross-drains across the roads should be provided in hill slopes to minimize soil erosion. Existing causeways and temporary bridges should be improved. Light morrum topping of road should be done periodically so as to encourage compaction and prevent soil loss and erosion because of surface runoff. Roads should be repaired every year generally during November and December.

- ii. Attempt should be made to black top/make all weather roads connecting vulnerable forest blocks so that the intensity of patrolling can improve round the calendar.
- iii. The concerned Range officer shall prepare a plan and estimate for annual repair/special repair after physical verification of forest roads and obtain the approval of the competent authority prior to execution of the work. In case of new construction, detailed investigation shall be undertaken before execution of any such project.

3.7.5.6 Forest Fire Protection:

- i. The extent, causes and damage done to forest by forest fire have been explained at Para 2.18 of chapter- I of Part - I. Forest blocks vulnerable to fire based on satellite imageries have been identified in Chapter 2A. Protection against fire requires concerted effort of the field staff and the forest fringe dwellers during the period from February to May.
- ii. Fire continues to be the major threat to forest regeneration and establishment. Fire watcher system needs to be strengthened in the identified vulnerable areas. Depending upon requirement and availability of funds fire watchers shall be provided to every vulnerable areas.
- iii. The VSS should be involved in containing forest fires. Incidence of annual fire should be entered in the compartment history. Fire prone areas should be identified and precautionary measures taken in time. Every year block wise fire maps need to be prepared, fire protection incentive schemes which are in vogue may be widened & given wide publicity through print & electronic media.
- iv. Annual fire line clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning shall be done under the personal supervision of the Forester /Forest Guard. Moreover, old fire lines, forest roads, boundary lines, village ring shall be cleared by taking up control burning in 1-chain strip on both sides of it.
- v. Modern fire fighting methods should be adopted
- vi. Awareness on the damage caused by fire to be created amongst the people

3.7.5.7 Communication System and Mobility:

- i. The VHF system in vulnerable pockets of the Division needs to be strengthened. It has come to a standstill. Fixed sets, mobile sets and hand set should be made available. Each Protection squad should be provided at least one fixed set and one hand set.
- ii. Since, fast communication is vital for transmitting information and also for deployment as well as re-enforcement in an emergency case, there shall be VHF system installed at the Divisional office and all the Range HQs and supplied to every Protection Squad. Besides, all the four wheel vehicles shall also be installed with mobile VHF sets.
- iii. Attempt shall be made to provide every Protection unit with a jeep/van
- iv. All communication through VHF between and among different stations, protection squad and mobile units should be properly entered in a register and maintained chronologically.
- v. In order to improve the communication network and hence protection network, mobile phones need to be issued to all staff with SIM cards.

3.7.5.8 Rewards for Forest Protection: Government of Odisha have instituted various annual prizes and awards which are being distributed on different occasions. The purpose of giving awards is to recognize the good work done by individuals and institutions in the field of forest & environment conservation and to encourage people's participation in protection of forests and wildlife and conservation of environment. Meritorious work done by forest field staff is also rewarded through the State Forestry Awards. As envisaged in Rule 268, 269, 270, 271, 272, 377 and 378 of the Orissa Forest Department Code-1979 rewards can be given to the cutting edge staff of the Forest Department & Public having commendable contributions in the field of Forest & Wildlife Protection. Government of Odisha have instituted the Odisha Rewards for Detection of Forest Offences Rules, 2004 vide the Odisha gazette notification no SRO 52/2005 dated 28th January'2005.

3.7.6 Associated Regulations and Measures:

3.7.6.1 Action on Encroachment: Encroachment in forest area should be verified and surveyed taking latitude & longitude on corner points, marked on Management Maps and extent of encroached areas are to be calculated. Encroached area must be evicted and the area should be brought under plantation. Proper boundary perambulation to be done in the field and necessary maintenance of boundary pillars need to be ensured.

3.7.6.2 Shifting Cultivation (Podu Cultivation): Tribal people need to be motivated to give up such primitive and pernicious practice. Tribal Welfare Department may be consulted to extent their developmental schemes to rehabilitate the tribal people who are doing Shifting Cultivation.

3.7.6.3 Catchment Area Treatment: Soil and moisture conservation work should be taken in the catchment area by constructing check dams, gully plugging, digging contour trenches, etc.

3.7.6.4 Peoples' participation: The JFM mode for participation of local people for Forest Protection and Management in accordance with the Government policy will be intensified. A sense of ownership will be inculcated in the mind of the VSS members for management & protection of forest so that the ground staff of Forest Department can function in advisory and facilitating role only. Community managed ecotourism activities need to be planned in JFM mode to improve the employment opportunities to local forest dependent community.

CHAPTER –4

REHABILITATION WORKING CIRCLE

4.1. Rehabilitation Working Circle: Rehabilitation Working Circle has been prescribed in this Revised Working Plan for taking up rehabilitation measures to improve the Growing Stock of forest and quality of forest vegetation in degraded forest patches. This Working Circle has been shown in the Management Map in 1:50,000 scale.

4.2 General Constitution of Working Circle: In the previous Working Plan of Sri Suresh Pant, IFS for the period from 1997-98 to 2016-17, the degraded forest blocks and old plantations raised in past, coppice worked out areas and blank areas had brought under Rehabilitation-cum-Plantation Working Circle. In this working plan also, all those forest blocks which require rehabilitation measures and were under Rehabilitation-cum-Plantation have been brought under this Working Circle in this Revised Working Plan for the period from 2021-22 to 2030-31 for taking up rehabilitation measures to improve the growing stock of forest and the quality of forest vegetation. Old plantation areas have been covered under Plantation Working Circle in the next Chapter. In the Rehabilitation Working Circle, 5 RFs of 3547.309 Ha. and 16 PRFs of 10928.173Ha. have been covered. Further, 25 nos of Demarcated Protected Forests of 5849.793 ha. have been included in this Working Circle. The total area under this Working Circle comes to 20,325.275 ha. Forest Blocks allotted to this Working Circle are given in the following

Table No.4.2.1

Table No.4.2.1-Forest area allotted to Rehabilitation Working Circle.						
Sl. No.	Range	Name of the Forest Block	Area in ha. as per Govt. Notification	Computed area in ha. taken for management	Compt/ Sub-Compt.allotted	Area allotted to Rehabilitation WorkingCircle in Ha.
1	2	3	4	5	6	7
Reserved Forests						
1	Kuliposh/ Barsuan	Amrudi RF	2440.416	2408.62	1(a), 2(a), 3(a), 4(a), 5(a), 6, 7(a), 8(a) & 9(a)	860.688
2	Kuliposh	Kundheibira RF	214.488	260.437	Entire	260.437
3	Kuliposh	Mahulpada RF	4734.925	4565.000	1(a), 2(a), 3(a) (Part), 4(a) (part), 5(a), 6(a)	720.953
4	Barsuan	Khandadhar RF	927.559	927.560	Part	199.757
5	Sole	Sirgida RF	4538.648	4393.563	2(a),3, 4,5,6(a)&10(a)	1505.474
					Total :-	3547.309
Proposed Reserved Forests						
1	Kuliposh/ Barsuan	Khandadhar PRF	1694.698	1570.375	Entire	1567.141
2	Kuliposh/ Barsuan	Nagaria PRF	7709.429	9684.811	1(b), 8(b) & 16(b)	972.187
3	Kuliposh/ Barsuan	Amrudi PRF	1744.233	1580.500	Part	1480.500
4	Kuliposh	Budhapahar A PRF	656.819	685.938	Part	665.938
5	Kuliposh	Talbahali-Barhaguda PRF	377.984	347.813	Part	247.813
6	Koira	Khajurdihi PRF	3474.301	3634.313	1(b),2(b)&3(b),4,5, 6&7(a)	1973.922
7	Koira	Bhabanipahar PRF	1473.087	1290.313		1221.543
8	Koira	Kathmal PRF	213.678	213.678	Part	122.295
9	Koira	Mendamaruni –I PRF	1800.890	472.937	Part	471.882
10	Koira	Gonua PRF	466.467	352.375	Part	352.035
11	Koira	Soyamba PRF	23.957	23.957	Entire	23.957
12	Koira	Rakshi PRF	80.938	60.313	Entire	60.313
13	Koira	Mendamaruni –II PRF	416.479	340.875	Part	200.000
14	Barsuan	Sarkunda PRF	6434.641	4950.313	3, 6(a), 7(a), 8(a), 10 & 11(a)	913.667
15	Tamra	Kusumdihi-II PRF	101.853	76.875	Entire	76.875
16	Tamra	Nalaghati-Rajabasa PRF	607.061	678.625	Part	578.105
					Total:-	10928.173

Demarcated Protected Forests						
1	Bonai	Ulundapahar DPF	167.77	-	-	167.770
2	Bonai	Dandpat DPF	619.182	-	-	619.182
3	Bonai	Dandpat Hill Block DPF	669.77	-	-	669.770
4	Bonai	Dalki-Rajanbeda DPF	47.102	-	-	47.102
5	Bonai	Padagoth DPF	1010.602	-	-	1010.602
6	Bonai	Bijakuli-Beldihi DPF	658.23	-	-	658.230
7	Bonai	Barachhapal-Pankihuli DPF	60.582	-	-	60.582
8	Bonai	Bandhabhuin-DakmundaDPF	283.083	-	-	283.083
9	Kuliposh	Singardei DPF	111.323	-	-	111.323
10	Kuliposh	Kumundi DPF	121.914	-	-	121.914
11	Kuliposh	Jagati DPF	73.613	-	-	73.613
12	Koira	Ranisa DPF	140.380	-	-	140.380
13	Koira	Kalmang DPF	80.939	-	-	80.939
14	Koira	Karo DPF	215.702	-	-	215.702
15	Barsuan	Raikela DPF	390.530	-	-	390.530
16	Barsuan	Toda DPF	240.335	-	-	240.335
17	Koira	Kaptadihi DPF	30.720	-	-	30.720
18	Barsuan	Tinko DPF	141.744	-	-	141.744
19	Tamra	Rankei DPF	324.795	-	-	324.795
20	Tamra	Gurundia-Badgaon DPF	79.623	-	-	79.623
21	Tamra	Rushimath-I DPF	120.922	-	-	120.922
22	Tamra	Dhenkiam Part-III DPF	47.861	-	-	47.861
23	Jarda	Kunshibahal DPF	33.913	-	-	33.913
24	Jarda	Kello-II DPF	129.988	-	-	129.988
25	Jarda	Kello-III DPF	49.170	-	-	49.170
		Total :-	5849.793	-	-	5849.793
		G. Total :-				20,325.275

4.3 General Characteristics of Vegetation:

4.3.1 The forest vegetation of Amrudhi RF, Kundhebira RF, and Sirigida RF are in degraded condition and need suitable rehabilitation measures. The natural vegetation in the Amrudhi RF, and Kundhebira RF blocks contain a fair proportion of miscellaneous species among which Asan, Karada, Sidha and Dhaura are more prominent. The forest cover of Sirigida RF is of moist peninsular Sal type and Sal is the dominant species in the block with its percentage varying from 30 to 40%. The Sirigida RF block is having fairly good growth of bamboo. Overall, the status of natural regeneration is not satisfactory.

4.3.2 Forest blocks of Khandadhar PRF, Khajurdihi PRF, Gonua PRF, Bhawanipahad PRF and plateau portion of Nagaria PRF have moist peninsular Sal type of forest. A good proportion of these blocks had been subjected to the pernicious practice of shifting cultivation in the past for which scrubby and bushy type of vegetation, heavy growth of weeds like Eupatorium and Lantana have come up. The Sal is the dominant species and has considerably good growth in few low lying areas and moist valley portions. The natural regeneration is poor.

4.3.3. The natural species which find their occurrence in the areas of this working circle are mainly Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*), Dhaura (*Anogeissus latifolia*), Kasi (*Bridelia retusa*), Bija (*Pterocarpus marsupium*), Kendu (*Diospyros melanoxylon*), Jamu (*Syzigum cumini*), Bahada (*Terminalia bellerica*), Karada (*Clitanthus collinus*), Kurei (*Holarrhena antidysentrica*), Mahul (*Madhuca indica*), Bel (*Aegle marmelos*), Salai (*Boswellia serrate*), Char (*Buchnanian lanzan*), Harida (*Terminalia chebula*), Anla (*Embllica officinalis*) Tendra etc. The adverse factors out of biotic pressure along with other locality factors have affected the natural regeneration very badly. Overall, in these forests the areas bearing vegetation of natural origin are in degraded stage and require rehabilitation measures.

4.4 Constitution of Rehabilitation Series:

4.4.1. A total of 20325.275 Ha. area is to be rehabilitated within the plan period. To implement the prescription of the Rehabilitation Working Circle, 16 nos. Treatment Series have been constituted as follows.

1. Amrudhi Treatment Series,
2. Khandadhar Treatment series.
3. Nagaria Treatment Series,
4. Sirigida Treatment Series,
5. Bhwanipahad Treatment Series,,
6. Gonua Treatment Series,
7. Khajurdihi Treatment Series,
8. Sarkunda Treatment Series
9. Ulundapahar Rehabilitation Series,
10. Padagoth Rehabilitation Series,
11. Bijakuli-Beldihi Rehabilitation Series ,
12. Dalki-Rajanbeda Rehabilitation Series ,
13. Raikela Rehabilitation Series and
14. Rankei Rehabilitation Series.
15. Amrudhi PRF Rehabilitation Series.
16. Budhapahar Rehabilitation Series.

Table 4.4.1- Forest Range wise Rehabilitation Series					
Range	Name of Rehabilitation Series	R.F. & P.R.F. blocks	Compartment & Sub-compartment	Area (in ha.)	Total area of Rehabilitation Series (in ha.)
1	2	3	4	5	6
Kuluposh/ Barsuan	Amrudhi	Amrudhi RF	1(a), 2(a), 3(a), 4(a), 5(a), 6, 7(a), 8(a) & 9(a)	860.688	1121.125
Kuliposh		Kundheibira RF	Entire	260.437	
Kuluposh/ Barsuan	Khandadhar	Khandadhar PRF	Part	1567.141	1766.898
		Khandadhar RF	Part	199.757	
Kuluposh/ Barsuan	Nagaria	Nagaria PRF	1(b), 8(b) & 16(b)	972.187	1693.140
		Mahulpada RF	1(a), 2(a), 3(a) (Part), 4(a) (part), 5(a), 6(a)	720.953	
Sole	Sirigida	Sirigida RF	2(a), 3, 4, 5, 6(a) & 10(a)	1505.474	1505.474
Koira	Bhawanipahad	Soyamba PRF	Entire	23.957	1367.795
		Bhawanipahad PRF	Entire	1221.543	
		Kathmal PRF	Part	122.295	
Koira	Gonua	Khajurdihi PRF	1(b), 2(b) & 3(b)	1254.175	1606.210
		Gonua PRF	Part	352.035	
Koira	Khajurdihi	Khajurdihi PRF	4, 5& 7(a)	719.747	1191.629
		Mendhamaruni PRF Part-I	Entire	471.882	
Barsuan	Sarkunda	Sarkunda PRF	3, 6(a), 7(a), 8(a), 10 & 11(a)	913.667	913.667
Bonai	Ulundapahar	Ulundapahar DPF	Entire	167.770	1456.722
		Dandpat DPF	Entire	619.182	
		Dandpat Hill Block DPF	Entire	669.77	
Bonai	Padagoth	PadagothDPF	Entire	1010.602	1010.602
Bonai	Bijakuli-Beldihi	Bijakuli-Beldihi DPF	Entire	658.23	941.313
		Bandhabhuin-Dakmunda DPF	Entire	283.083	
Bonai	Dalki-Rajanbeda	Dalki-Rajanbeda DPF	Entire	47.102	815.227
		Barachhapal-Pankihuli DPF	-do-	60.582	
Koira		Mendhamaruni-II PRF	Part	200.000	
		Rakshi PRF	Entire	60.313	
		Ranisal DPF	-do-	140.380	
Kuliposh		Singardei DPF	-do-	111.323	
		Kumundi DPF	-do-	121.914	
		Jagati DPF	-do-	73.613	

Koira/ Barsuan	Raikela	Kalmang DPF	Entire	80.939	1099.970	
		Karo DPF	Entire	215.702		
		Raikela DPF	Entire	390.53		
		Toda DPF	Entire	240.335		
		Kaptadihi DPF	Entire	30.72		
Barsuan		Tinko DPF	Entire	141.744		
Tamra	Rankei	Rankei DPF	Entire	324.795	1441.252	
		Gurundia-Badgaon DPF	Entire	79.623		
		Rushimath-I DPF	Entire	120.922		
		Dhenkiam Part-III DPF	Entire	47.861		
		Nalaghati-Rajabasa PRF	Part	578.105		
		Kusumdihi-II PRF	Entire	76.875		
		Jarda	Kunshibahal DPF	Entire		33.913
			Kello-II DPF	Entire		129.988
Kello-III DPF	Entire		49.17			
Kuliposh/ Barsuan	Amrudhi PRF	Amrudhi PRF	Part	1480.5	1480.500	
Kuliposh	Budhapahar	Budhapahar A PRF	Part	665.938	913.751	
		Talbahali-Barhaguda PRF	Part	247.813		
Total Forest Area in 16 Rehabilitation Series				20325.275	20325.275	

4.5 Blocks and Compartments: There has been no change in the names of Reserve Forest blocks dealt with in the previous Plan. 5 nos of RF Blocks, 16 nos of PRF blocks and 25 nos of DPFs have also been brought under this Working Circle. Areas of all RF & PRF blocks have been computed from the latest topographical sheets of scale 1:50,000 in the previous Plan. Computed area of most of the RF & PRF blocks do not tally with the corresponding notified areas as maintained in the records of Division office. The computed area has been taken into account for the purpose of formation of annual rehabilitation coupes. However Notified area of all RF & PRF blocks as maintained in the records of Division office stands as it is in the previous Plan, some compartments of few RF blocks were further divided into sub-compartments. Compartments and sub-compartments formed in the previous plan have been retained. On the basis of conspicuous topographical features, compartments have been formed and delineated in topographical maps only.

4.6 Special Objectives of Management: Special objectives of management within the ambit of the general objective of management of this Working Circle are as follows:

- 1) To enrich the micro-edaphic conditions and ensure maximum conservation of soil and water through proper soil conservation measures and through involvement of local people.
- 2) To tend and improve the existing growing stock through suitable silvicultural measures.
- 3) To boost growth of Sal and other valuable species of coppice origin adopting appropriate silvicultural operation.
- 4) To enhance soil productivity through soil and moisture conservation measures.
- 5) To improve the condition of existing forests through protection against grazing, fire and illicit felling.
- 6) To provide adequate protection to the areas having rootstock and constitute JFM committee to involve the local people.
- 7) To meet the bona fide needs of local inhabitants like firewood, small timber, fodder, NTFP, etc. in future when restocked.

4.6.1 Analysis of the Crop: The entire Working Circle has been surveyed by random stratified sampling method taking sample point of 0.1 ha in different strata of forest. Enumeration of trees, shrubs herbs, regeneration have taken up in the sample plot by following the directions given the National Working Plan Code 2014. The nos of different species girth class wise have been assessed for the forest blocks coming under Rehabilitation Working Circle. Due to severe biotic interference in the form of illicit felling, over grazing, fire hazards, shifting cultivation, and illegal mining activities Forest blocks under this circle are in various stages of degradation. The existing forest vegetation in the circle is of poor quality, stunted type of growth and is of irregular form, age, and diameter class-wise on distribution point of view. The crop density generally is less than 0.4.

4.6.2 Silvicultural System:The first and foremost concern of management is to protect and improve the existing forest growth through rehabilitation measures.No exploitation is to be done in the natural vegetated areas except removal of dead, dying, diseased and moribund trees.In the light of these objectives, the Silvicultural System prescribed is ‘Rehabilitation with Assisted Natural Regeneration.’”

4.6.3 Harvestable Diameter: Since, areas are to be protected and rehabilitated, no trees shall be harvested except dead, dying, diseased trees. Hence, no harvestable diameter is prescribed.

4.6.4 Rehabilitation Cycle: For rehabilitation of degraded forest areas allotted to this Working Circle, Rehabilitation Cycle of 10 years is prescribed to synchronize with the Plan period.

4.6.5Annual Rehabilitation Coupes of Rehabilitation Series: Each Rehabilitation series has been divided into 10 nos of annual rehabilitation coupes to be worked out during the Plan period. The Forest Blocks,Compartments and Sub compartments allotted to different Rehabilitation Coupes with their areas are furnished below in table 4.6.5.1.

Table 4.6.5.1							
Compartments and Sub- Compartment wise Rehabilitation Coupes							
1-Amrudi Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Kundheibira	RF	Part	130.000	130.000
2022-23	II	Kuliposh	Kundheibira	RF	Bal	130.437	130.437
2023-24	III	Barsuan	Amrudi	RF	Am.6 Part Am.7 (a) part	122.155 50.000	172.155
2024-25	IV	Barsuan	Amrudi	RF	Am.7 (a) bal Am.6 (bal)	45.019 40.000	85.019
2025-26	V	Kuliposh	Amrudi	RF	Am.5 (a) part	80.000	80.000
2026-27	VI	Kuliposh	Amrudi	RF	Am.5 (a) bal Am.9 (a)	96.474 17.521	113.995
2027-28	VII	Kuliposh	Amrudi	RF	Am.8 (a) Am.2 (a)	53.884 41.422	95.306
2028-29	VIII	Kuliposh	Amrudi	RF	Am.1 (a) part	100.000	100.000
2029-30	IX	Kuliposh Barsuan	Amrudi	RF	Am.1 (a) bal Am.3 (a)	40.690 55.078	95.768
2030-31	X	Barsuan	Amrudi	RF	Am.4 (a)	118.445	118.445
					Total :-	1121.125	1121.125

N.B.:- Am= Amrudi RF

2-Khandadhar Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2022-23	II	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2023-24	III	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2024-25	IV	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2025-26	V	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2026-27	VI	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2027-28	VII	Barsuan	Khandadhar	PRF	Kh. PRF part	160.000	160.000
2028-29	VIII	Barsuan	Khandadhar	PRF	Kh. PRF part	184.141	184.141
2029-30	IX	Kuliposh	Khandadhar	PRF	Kh. PRF (bal)	263.000	263.000
2030-31	X	Barsuan	Khandadhar	RF	Kh.RF part	199.757	199.757
					Total :-	1766.898	1766.898

N.B. :- Kh. –Khandadhar

3 -Nagaria Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Nagaria	PRF	Ng.1 (b) part	150.000	150.000
2022-23	II	Barsuan	Nagaria	PRF	Ng.1 (b) part	150.000	150.000
2023-24	III	Barsuan	Nagaria	PRF	Ng.1 (b) bal,	106.750	164.313
					Ng.8(b) part	57.563	
2024-25	IV	Barsuan	Nagaria	PRF	Ng.8 (b) bal	150.000	150.000
2025-26	V	Kuliposh	Nagaria	PRF	Ng.16 (b) part	180.000	180.000
2026-27	VI	Kuliposh	Nagaria	PRF	Ng.16 (b) bal	177.874	177.874
2027-28	VII	Kuliposh	Mahulpada	RF	Mp 1(a),	69.346	199.835
					Mp 2(a)	130.489	
2028-29	VIII	Kuliposh	Mahulpada	RF	Mp 3(a)	222.716	222.716
2029-30	IX	Kuliposh	Mahulpada	RF	Mp 4(a),	116.044	165.073
					Mp 5(a)	49.029	
2030-31	X	Kuliposh	Mahulpada	RF	Mp 6(a)	133.329	133.329
					Total :-	1693.140	1693.140

N.B.- Ng.- Nagaria PRF

Mp- Mahulpada RF

4-Sirigida Rehabilitation Series :-							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Sole	Sirigida	RF	S.6 (a) part	134.393	134.393
2022-23	II	Sole	Sirigida	RF	S.5 part	160.000	160.000
2023-24	III	Sole	Sirigida	RF	S.5 bal	164.782	164.782
2024-25	IV	Sole	Sirigida	RF	S.4 part	160.000	160.000
2025-26	V	Sole	Sirigida	RF	S.4 bal	168.882	168.882
2026-27	VI	Sole	Sirigida	RF	S.3 part	140.000	140.000
2027-28	VII	Sole	Sirigida	RF	S.3 bal	125.501	125.501
2028-29	VIII	Sole	Sirigida	RF	S.2 (a) part	180.000	180.000
2029-30	IX	Sole	Sirigida	RF	S.2 (a) bal	81.591	131.916
					S.10 (a)	50.325	
2030-31	X	Sole	Sirigida	RF	S.6 (a) (bal)	140.000	140.000
					Total :-	1505.474	1505.474

N.B. :- S. Sirigida RF

5-Bhawanipahad Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2022-23	II	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2023-24	III	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2024-25	IV	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2025-26	V	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2026-27	VI	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2027-28	VII	Koira	Bhabanipahar	PRF	Bd. PRF part	140.000	140.000
2028-29	VIII	Koira	Bhabanipahar	PRF	Bd. PRF part	160.000	160.000
2029-30	IX	Koira	Bhabanipahar	PRF	Bd. PRF bal	81.543	105.500
			Soyamba PRF	PRF	Entire	23.957	
2030-31	X	Koira	Kathmal PRF	PRF	Part	122.295	122.295
					Total :-	1367.795	1367.795

N.B.:- Bd. = Bhabanipahar PRF

6-Gonua Rehabilitation Series :-							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Gonua Khajurdihi	PRF PRF	Gn. PRF part Kh. PRF 1 (b) part	82.035 100.000	182.035
2022-23	II	Koira	Khajurdihi	PRF	Kh. PRF 1 (b) part	200.000	200.000
2023-24	III	Koira	Khajurdihi	PRF	Kh. PRF 1 (b) bal	186.459	186.459
2024-25	IV	Koira	Khajurdihi	PRF	Kh. PRF 2 (b) part	160.000	160.000
2025-26	V	Koira	Khajurdihi	PRF	Kh. PRF 2 (b) (bal)	160.703	160.703
2026-27	VI	Koira	Khajurdihi	PRF	Kh. PRF 3 (b) part	125.000	125.000
2027-28	VII	Koira	Khajurdihi	PRF	Kh. PRF 3 (b) part	125.000	125.000
2028-29	VIII	Koira	Khajurdihi	PRF	Kh. PRF 3 (b) part	125.000	125.000
2029-30	IX	Koira	Khajurdihi Gonua	PRF PRF	Kh. PRF 3 (b) bal Gn. PRF part	72.013 90.000	162.013
2030-31	X	Koira	Gonua	PRF	Gn. PRF (bal)	180.000	180.000
					Total :-	1606.210	1606.210

N.B. :- Gn. Gonua, Kh. Khajurdihi

7- Khajurdihi Rehabilitation Series :							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Khajurdihi	PRF	Kh. PRF.4 part	60.000	60.000
2022-23	II	Koira	Khajurdihi	PRF	Kh. PRF.4 part	50.000	50.000
2023-24	III	Koira	Khajurdihi	PRF	Kh. PRF.4 part	107.339	107.339
2024-25	IV	Koira	Khajurdihi	PRF	Kh. PRF.5 part	150.000	150.000
2025-26	V	Koira	Khajurdihi	PRF	Kh. PRF.5 bal	157.522	157.522
2026-27	VI	Koira	Khajurdihi	PRF	Kh. PRF.7 (a) part	20.000	120.000
			Mendhamaruni-I	PRF	Mm.PRF-I (Part)	100.000	
2027-28	VII	Koira	Khajurdihi	PRF	Kh. PRF.7 (a) bal	69.098	69.098
2028-29	VIII	Koira	Khajurdihi	PRF	Kh. PRF.4 (bal)	105.788	105.788
2029-30	IX	Koira	Mendhamaruni-I	PRF	Mm.PRF.1.part	190.000	190.000
2030-31	X	Koira	Mendhamaruni-	PRF	Mm.PRF.1.bal	181.882	181.882
					Total :-	1191.629	1191.629

N.B. :- Kh.- Khajurdihi PRF

Mn.- Mendhamaruni PRF

8-Sarkunda Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Barsuan	Sarkunda	PRF	S.PRF.3.part	120.000	120.000
2022-23	II	Barsuan	Sarkunda	PRF	S.PRF.3.part S.PRF.6 (a) part	60.691 50.000	110.691
2023-24	III	Barsuan	Sarkunda	PRF	S.PRF.6 (a) bal	101.556	101.556
2024-25	IV	Barsuan	Sarkunda	PRF	S.PRF.7 (a)	129.190	129.190
2025-26	V	Barsuan	Sarkunda	PRF	S.PRF.8 (a) S.PRF.10 part	64.181 20.000	84.181
2026-27	VI	Barsuan	Sarkunda	PRF	S.PRF.10 part	40.000	40.000
2027-28	VII	Barsuan	Sarkunda	PRF	S.PRF.10 bal	35.950	35.950
2028-29	VIII	Barsuan	Sarkunda	PRF	S.PRF.11 (a) part	68.926	68.926
2029-30	IX	Barsuan	Sarkunda	PRF	S.PRF.11 (a) bal S.PRF.3.part	43.173 60.000	103.173
2030-31	X	Barsuan	Sarkunda	PRF	S.PRF.3.bal	120.000	120.000
					Total :-	913.667	913.667

9-Ulundapahar Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Ulundapahar	DPF	Part	80.000	80.000
2022-23	II	Bonai	Ulundapahar	DPF	Bal.	87.770	87.770
2023-24	III	Bonai	Dandpat	DPF	Part	150.000	150.000
2024-25	IV	Bonai	Dandpat	DPF	Part	150.000	150.000
2025-26	V	Bonai	Dandpat	DPF	Part	150.000	150.000
2026-27	VI	Bonai	Dandpat	DPF	Bal	169.182	169.182
2027-28	VII	Bonai	Dandpat Hill Block	DPF	Part	150.000	150.000
2028-29	VIII	Bonai	Dandpat Hill Block	DPF	Part	150.000	150.000
2029-30	IX	Bonai	Dandpat Hill Block	DPF	Part	200.000	200.000
2030-31	X	Bonai	Dandpat Hill Block	DPF	Balance	169.770	169.770
					Total:-	1456.722	1456.722

10- Padagoth Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Padagoth	DPF	Part	100.000	100.000
2022-23	II	Bonai	Padagoth	DPF	Part	100.000	100.000
2023-24	III	Bonai	Padagoth	DPF	Part	100.000	100.000
2024-25	IV	Bonai	Padagoth	DPF	Part	100.000	100.000
2025-26	V	Bonai	Padagoth	DPF	Part	100.000	100.000
2026-27	VI	Bonai	Padagoth	DPF	Part	100.000	100.000
2027-28	VII	Bonai	Padagoth	DPF	Part	100.000	100.000
2028-29	VIII	Bonai	Padagoth	DPF	Part	100.000	100.000
2029-30	IX	Bonai	Padagoth	DPF	Part	100.000	100.000
2030-31	X	Bonai	Padagoth	DPF	Balance	110.602	110.602
					Total:-	1010.602	1010.602

11-Bijakuli-Beldihi Rehabilitation Series :-							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Bijakuli-Beldihi	DPF	Part	100.000	100.000
2022-23	II	Bonai	Bijakuli-Beldihi	DPF	Part	100.000	100.000
2023-24	III	Bonai	Bijakuli-Beldihi	DPF	Part	100.000	100.000
2024-25	IV	Bonai	Bijakuli-Beldihi	DPF	Part	100.000	100.000
2025-26	V	Bonai	Bijakuli-Beldihi	DPF	Part	100.000	100.000
2026-27	VI	Bonai	Bijakuli-Beldihi	DPF	Part	100.000	100.000
2027-28	VII	Bonai	Bijakuli-Beldihi	DPF	Balance	58.230	58.230
2028-29	VIII	Bonai	Bandhabhuin-Dakmunda	DPF	Part	100.000	100.000
2029-30	IX	Bonai	Bandhabhuin-Dakmunda	DPF	Part	100.000	100.000
2030-31	X	Bonai	Bandhabhuin-Dakmunda	DPF	Balance	83.083	83.083
					Total:-	941.313	941.313

12-Dalki-Rajanbeda Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Dalki-Rajanbeda	DPF	Entire	47.102	47.102
2022-23	II	Bonai	Barachhapal-Pankihuli	DPF	Entire	60.582	60.582
2023-24	III	Kuliposh	Singardei	DPF	Part	50.000	50.000
2024-25	IV	Kuliposh	Singardei	DPF	Balance	61.323	61.323
2025-26	V	Kuliposh	Kumundi	DPF	Part	60.000	60.000
2026-27	VI	Kuliposh	Kumundi	DPF	Balance	61.914	61.914
2027-28	VII	Kuliposh	Jagati	DPF	Entire	73.613	73.613
2028-29	VIII	Koira	Ranisal	DPF	Entire	140.380	140.380
2029-30	IX	Koira	Mendhamaruni-II	PRF	Part	130.000	130.000
2030-31	X	Koira	Rakshi	PRF	Entire	60.313	130.313
			Mendhamaruni-II	PRF	Balance	70.000	
					Total:-	815.227	815.227

13-Raikela Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Kalmang	DPF	Entire	80.939	80.939
2022-23	II	Koira	Karo	DPF	Part	100.000	100.000
2023-24	III	Koira	Karo	DPF	Balance	115.702	115.702
2024-25	IV	Barsuan	Raikela	DPF	Part	100.000	100.000
2025-26	V	Barsuan	Raikela	DPF	Part	100.000	100.000
2026-27	VI	Barsuan	Raikela	DPF	Part	100.000	100.000
2027-28	VII	Barsuan	Raikela	DPF	Balance	90.530	121.250
		Koira	Kaptadihi	DPF	Entire	30.720	
2028-29	VIII	Koira	Toda	DPF	Part	100.000	100.000
2029-30	IX	Koira	Toda	DPF	Balance	140.335	140.335
2030-31	X	Barsuan	Tinko	DPF	Entire	141.744	141.744
					Total:-	1099.970	1099.970

14-Rankei Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Tamra	Rankei	DPF	Part	160.000	160.000
2022-23	II	Tamra	Rankei	DPF	Balance	164.795	164.795
2023-24	III	Tamra	Nalaghati-Rajabasa	PRF	Part	150.000	150.000
2024-25	IV	Tamra	Nalaghati-Rajabasa	PRF	Part	150.000	150.000
2025-26	V	Tamra	Gurundia-Badgaon	DPF	Entire	79.623	127.484
			Dhenkiam-III	DPF	Entire	47.861	
2026-27	VI	Tamra	Rushimath-I	DPF	Entire	120.922	120.922
2027-28	VII	Tamra	Nalaghati-Rajabasa	PRF	Part	100.000	176.875
			Kusumdihi-II	PRF	Entire	76.875	
2028-29	VIII	Tamra	Nalaghati-Rajabasa	PRF	Balance	178.105	178.105
2029-30	IX	Jarda	Kello-II	DPF	Entire	129.988	129.988
2030-31	X	Jarda	Kello-III	DPF	Entire	49.170	83.083
			Kainsibahal	DPF	Entire	33.913	
						1441.252	1441.252

15 - Amrudi PRF Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2022-23	II	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2023-24	III	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2024-25	IV	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2025-26	V	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2026-27	VI	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2027-28	VII	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2028-29	VIII	Kuliposh	Amrudi	PRF	Am. PRF part	150.000	150.000
2029-30	IX	Kuliposh	Amrudi	PRF	Am. PRF part	140.000	140.000
2030-31	X	Kuliposh	Amrudi	PRF	Am. PRF part	140.500	140.500
					Total :-	1480.500	1480.500

16 - Budhapahad Rehabilitation Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Talbahali Barhaguda	PRF	Tb. PRF part	120.000	120.000
2022-23	II	Kuliposh	Talbahali Barhaguda	PRF	Tb. PRF part	127.813	127.813
2023-24	III	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	90.000	90.000
2024-25	IV	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	90.000	90.000
2025-26	V	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	80.000	80.000
2026-27	VI	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	80.000	80.000
2027-28	VII	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	80.000	80.000
2028-29	VIII	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	80.000	80.000
2029-30	IX	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF part	80.000	80.000
2030-31	X	Kuliposh	Budhapahad (A)	PRF	Bd (A) PRF bal	85.938	85.938
					Total :-	913.751	913.751

4.6.6 Method of Execution of Rehabilitation Operation:

4.6.6.1. Demarcation of Rehabilitation Coupe: - For ensuring timely field operations, annual rehabilitation areas are to be delineated in the map and demarcated in the field in the year preceding the year in which it is due for working. This is to be done in following systematic manner.

1. For identifying and locating the annual rehabilitation areas of respective rehabilitation series, a preliminary reconnaissance survey should be carried out in the month of October.
2. If the forest blocks or compartments have divided into more than one annual coupe then whole area of the same have to be surveyed and as per the degree of degradation, annual rehabilitation area is to be identified and located. The more degraded areas are to be rehabilitated first than the less degraded areas.
3. Once the annual rehabilitation area is identified then it should be delineated in the management map and demarcated in the field.
4. In situations when the coupe line is not coinciding with the block or compartment line, then it is to be demarcated by clearing a strip of 2m. width and stone cairns of size 90 cm X 60 cm X 60 cm are to be erected at the corners and visible intervals along the line. While clearing 2m strip, all trees below 30 cm are to be felled. Trees of larger girth occurring along coupe line at visible distances are to be given two coaltar rings at breast height.
5. When coupe line is co-terminus with block/ compartment line then the latter one is to be maintained.
6. When the coupe line is coterminous with compartment line and the same has not been demarcated earlier, then two white paint rings at breast height are to be given in the trees standing along the compartment line.
7. The sign boards exhibiting the name, series number and extent of rehabilitation area are to be posted at prominent places preferably at the points where the coupe line meets road/ path.

4.6.6.2. Preparation of Treatment Map: Once the annual rehabilitation areas have been identified, delineated and demarcated in the field , an officer not below the rank of Range Officer should inspect and examine such area carefully and prepare a treatment map of the area. The treatment map so prepared should exhibit measures to be taken up for different patches within the annual rehabilitation area.

Various areas included under this working circle are in different stages of degradation and require different type of site specific treatments. While preparing treatment map, boardly following types of areas are to be distinguished:-

- Type-A :-** Areas previously worked under coppice system requiring singling-out of coppice shoot, pruning climber cutting, removal of high stumps and other tending operations.
- Type-B:-** Areas having Sal or Bamboo rooted waste unable to establish due to grazing, fire and repeated hacking.
- Type-C :-** Hill slopes, bereft of vegetation or with scanty forest growth, requiring immediate soil conservation and afforestation measures.
- Type-D:-** Areas which had been subjected to shifting cultivation in the past having bushy and scrubby type of growth or weedy growth requiring soil conservation as well as afforestation measures.

Within the annual rehabilitation coupe, all the patches having scrubby and scanty vegetative growth are to be identified and depicted in the treatment map for taking up rehabilitation measures. The treatment map should also reflect erosion channels and should indicate various mechanical and vegetative measures required for preventing soil erosion. Area under active encroachment or shifting cultivation are also to be shown in the treatment map.

4.6.6.3. Preparation of Cost Estimate: Once the treatment map for an annual coupe is prepared the next step is to prepare cost estimate by the Range Officer for various suggested rehabilitation measures. This estimate should be detailed in nature and should provide a clear idea on the expenditure to be incurred for undertaking various rehabilitation measures like regeneration cleaning, soil conservation measures, gap planting, etc. The treatment map for each annual rehabilitation area and the cost estimate for various rehabilitation measures therein should be submitted to the D.F.O. for his approval and the same should be checked and approved by the Divisional Forest Officer by 31st December.

All the rehabilitation measures in the respective annual coupes are to be carried out systematically as per the treatment map and suggestions therein. The treatment map and the rehabilitation measure suggested therein should have prior approval of the D.F.O. before commencement of work.

The treatment of rehabilitation areas will require a good amount of funds under RDF and ANR scheme. Therefore, depending upon the availability of funds under these schemes, D.F.O. should ensure continuity of rehabilitation operations as per the sequence prescribed in the plan. In situations where more funds are available, extra funds may be utilized by extending the operations to the areas earmarked for subsequent year. Similarly, when funds available are insufficient to cover the whole target area in a particular year then the balance area should be treated next year. In both the cases, proper records should be maintained and deviation statement should be submitted to all the concerned.

As per the degree of degradation, various rehabilitation areas will require different types of area specific treatments. For that purpose, following area specific rehabilitation measures are suggested.

(i) Operations in Type 'A' & 'B' areas: This category covers coppice worked out areas in the past and areas having Sal and bamboo waste. In these areas, following operations are to be taken up :-

1. Cutting back of all high stumps.
2. Cutting of all climbers and uprooting them wherever possible.
3. Singling out of multiple coppice shoots and retaining of most promising one.
4. The 'C' grade thinning in congested patches, under this dead, moribund, diseased, suppressed, dominated and defective dominant trees are to be removed without creating lasting gap in the canopy.
5. Planting of two year old seedlings of bamboo along with fruit bearing and NTFP yielding species under ANR Scheme.

(ii) Operations in Type 'C' areas: This category covers the hill slopes bereft of vegetation or with scanty vegetative growth. For such type of areas, following measures are to be taken up:-

1. Suitable soil & moisture conservation measures such as gully plugging contour bunding etc. shall be taken up for stabilizing the soil.
2. The expansion of gullies is to be prevented by providing check dams of brush-wood, rubbels, etc. across the gullies, where the gully erosion is acute, masonry dam may be provided. Diversion channels are also to be provided to divert the run-off. Just after the advent of monsoon, the beds of gullies should be planted with the species like Sabai grass, Ipomea cornea, Agave, Acacia, Ailanthus excels, Vitex negundo, Sissoo etc. and the spacing for the same should be kept as 2m X 2m.
3. For those areas having slope more than 15°, staggered contour trenches are to be dug along the contours. The size of contour trenches should be 6m X 0.3m X 0.3m and their spacing should be 8m along the contour line and 10m along the slopes. The dug out earth of the contour trench is to be deposited on the down hill side and the same will serve as seed bed for raising tree species like Acacia, Cassia, Khair, Sisoo, Babul, Siris etc. Agave and Sabai grass may be planted in the intervening spaces of contour trenches.
4. In areas having moderate to gentle slope of less than 15°, a series of small contour bunds are to be constructed along the contour in a staggered manner by scrapping out soil to a depth of 0.3m and width of 0.5m. The dug-out soil will

be heaped on the down hill side. On the bunds, species like Acacia, Babul, Agave etc. are to be planted. The intervening strips are to be planted with species like Acacia, Simul, Cassia, Piasal, Bamboo etc.

5. All the preventive measures against soil erosion should be completed before the end of April so as to allow piled up soil and trenches to weather suitably before the onset of monsoon.

(v) Operations in Type 'D' areas:-This covers areas which had been subjected to shifting cultivation in the past and which are either open with no vegetative growth or covered with bushy, scrubby and weedy type of vegetation. This also includes the patches which are under active shifting cultivation. In such areas following measures are to be carried out:-

1. In areas having dense bushy and scrubby type of growth, the cleaning and pruning operations are to be carried out. All the bushy growth need to be removed except the saplings, poles and trees of important and useful species. The site is to be given control burning without causing any harm to the retained growth. Afterwards, as per requirement, enrichment plantation is to be taken up.
2. Wherever required, necessary soil and water conservation measures as prescribed are to be taken up.
3. Necessary administrative measures need to be taken up for the areas which are under active shifting cultivation.
4. Necessary educative measures are to be taken up for dissuading the tribals against shifting cultivation.

4.6.6.4. Fencing:-

(i) Vegetative fencing: It is a very useful and the cheapest mode of fencing having utility in future. For that reason, this type of fencing should be preferred over other types. Under this type of fencing, species which form close hedges and which are non-browsable are to be planted. For this purpose Euphorbia and Agave species are to be

preferred. These species should be chosen for this purpose as they can be readily grown from cutting and possess thorns and not liked by animals. These species are to be planted in a staggered manner in six rows at spacing of 1m X 1m along boundaries of the block. Two rows of vetiver grass 30 cm apart may be sown in the inner side of boundary next to the rows of planted species. This type of fencing should precede rehabilitation measures.

(ii) Trench fencing: - Where the entire block is allotted to this working circle or the block boundary forms the boundary of the rehabilitation area, trapezoidal cattle proof trenches may be excavated on the boundary lines with a depth of 1.5m and width at bottom and top being 1.0m and 2.0m respectively. The dug out earth of trench should be heaped in the form of a ridge on the inner side of the rehabilitation area, such ridges should be provided with the gaps at regular intervals. The trench digging should be confined to gentle slopes or plain areas. The undulating terrains should be avoided for this purpose as that may give rise to subsequent erosion and gully formation. This operation should start in winter and should be completed before the end of May. During the month of June, sowing of the seeds of Babul, Neem Acacia, etc. is to be taken up on the trench mound. The bulbils of Agave may also be planted to provide additional protection. Though the trench fencing is one of the most effective protection measures, it involves a large amount of expenditure which may or may not be available at Divisional level, so this type of fencing is to be resorted to only when surplus funds, especially for this purpose are available.

(iii) Stone wall fencing: Where trench fencing is not feasible due to rocky or boulder terrains, the construction of stone wall may be preferred. The size of stone wall should be 2.0m at bottom and 1.0m at top with a height of 1.5m. The stone wall should be provided with sufficient numbers of gaps for drainage of water. The prime importance of this fencing is the easy availability of stones and relatively low labour cost. However, this type of fencing needs repeated repairs and is not very effective against goats.

4.6.6.5 Regeneration:The status of regeneration is poor to absent in the forests of this Working Circle.Regeneration of indigeneous species may be taken up under Assisted Natural Regeneration to restock the forest vegetation.

4.6.7 Associated Regulation and Measures:

4.6.7.1 Control of Grazing: The annual protection areas shall remain closed for grazing. Practice of stall feeding to cattle, collection of grasses and fodders will be induced to the local people. The stipulations laid down in the Odisha Forests (Grazing of Cattle) Rules, 1980 shall be followed meticulously.

4.6.7.2 Fire Protection: Fire will be strictly protected in through out the Working Circle by engaging Fire fighting Squad, motivating local people,involving the VSS members and enforcing the provision of Forest Act,1972.

CHAPTER-5

PLANTATION WORKING CIRCLE

5.1. Plantation Working Circle: Plantation Working Circle has been prescribed for restocking the forest vegetation by taking artificial regeneration in suitable barren, bushy, weed affected and blank areas along with tending operations in the existing plantations. This Working Circle has been marked clearly and shown in Management Map in 1:50000 scale.

5.2 General Constitution of Working Circle: This Working Circle covers the forest areas where block plantations have been raised under artificial regeneration in different Forest Blocks in different schemes in the past. In addition to the above, this Working Circle also covers the forest areas having permanent blank patches and barren land suitable for taking up block plantations during the present Plan period i.e. from 2021-22 to 2030-31. The barren, bushy, weed affected and blank areas suitable for raising block plantation is included in this Working Circle.. Further, the suitable areas which had been subjected to shifting cultivation in the past and which are either open with no vegetative growth or covered with bushy scrubby and weedy type of vegetation and areas which are under active shifting cultivation, which are open with no vegetative growth are also included in this Working Circle. This Working Circle covers 18 RFs with forest area 2480.025 ha., 12 PRFs with forest area 617.371 ha. and 29 nos of PFs with forest area 575.654 ha. and 32 Nos. of Village Forests with forest area of 166.790 ha. Identified encroached forest areas from this Working Plan area have also brought under this Working Circle (18.495 ha.), subject to eviction. The total area of the Circle comes to 3839.840 ha.

The details of Forest Blocks and areas allotted to this Working Circle both for Plantation series and Tending series are given in the **Table 5.2.1.**

Table 5.2.1- Forest Blocks allotted to Plantation Working Circle								
Sl. No.	Range	Name of the Forest Block	Area in ha. as per Govt. Notification	Area in ha. as computed in previous Plan and taken for management	Compartment/ Sub-Compartment allotted	Area allotted to		
						Plantation Series	Tending Series	Total
1	2	3	4	5	6	7	8	9
Reserved Forests								
1	Bonai	Budhapahad RF	1041.278	1071.75	4(a)	-	7.285	7.285
2	Bonai	Baghiakucha RF	74.463	74.464	Part	30.000	43.363	73.363
3	Bonai	Baliatota RF	46.944	46.945	Entire	-	46.945	46.945
4	Bonai	Bonarai RF	66.774	66.775	Entire	-	66.775	66.775
5	Bonai	Chandiposh RF	61.918	61.918	Entire	-	61.918	61.918
6	Bonai	Jankinagar RF	95.912	95.913	Entire	-	95.913	95.913
7	Bonai	Kello-B RF	207.203	207.204	Entire	30.000	177.204	207.204
8	Bonai	Sinduria RF	1144.88	1144.881	1(a)	-	110.724	110.724
9	Bonai	Talita RF	101.983	101.983	Entire	28.983	73.000	101.983
10	Bonai	Dharanidharpali RF	178.065	178.066	Entire	28.066	150.000	178.066
11	Bonai	Gogua RF	131.121	131.121	Entire	96.121	35.000	131.121
12	Bonai	Huluku RF	30.756	30.757	Entire	-	30.757	30.757
13	Bonai	Sundhikhon RF	62.322	62.323	Entire	-	62.323	62.323
14	Bonai	Kendrikela RF	196.276	196.276	Part	-	195.091	195.091
15	Kuliposh	Mahulpada RF	4734.925	4565	3(a) (part), 4(a) (part), 8(a), 9(a) & 10(a)	350.897	90.000	440.897
16	Koira	Mendhamaruni RF	546.337	512.937	1part	100.187	125.000	225.187
17	Koira/ Barsuan	Bhabanipahar RF	370.295	370.295	part	128.187	33.000	161.187
18	Koira	Rakshi-I RF	1745.884	1796.289	4 (a) and 7	254.286	29.000	283.286
			10837.336	10714.897		1046.727	1433.298	2480.025
Proposed Reserved Forests								
1	Kuliposh/ Barsuan	Amrudi PRF	1744.233	1580.500	Part	94.000	6.000	100.000
2	Kuliposh	Budhapahar (A) PRF	656.819	685.938	Part	0.000	20.000	20.000
3	Kuliposh	Talbahali-Barhaguda PRF	377.984	347.813	Part	100.000	-	100.000
4	Tamra	Nalaghati – Rajabasa PRF	607.061	678.625	Part	100.000	-	100.000
5	Koira	Mendhamaruni –	416.479	340.875	Entire	115.875	25.000	140.875

		II PRF						
6	Koira	Toda - I PRF	38.446	47.063	Entire	47.063	-	47.063
7	Koira	Toda - II PRF	60.704	90.938	Entire	90.938	-	90.938
8	Kuliposh/ Barsuan	Khandadhar PRF (encroached area)	1694.698	1570.375	Part	2.930	-	2.930
9	Jarda	Raipiri-II PRF (encroached area)	289.356	253.250	Part	5.688	-	5.688
10	Jarda	Balia-II PRF (encroached area)	358.155	280.625	Part	6.357	-	6.357
11	Jarda	Kello PRF (encroached area)	62.323	72.375	Part	2.913	-	2.913
12	Jarda	Majurdima (B) PRF (encroached area)	-	26.937	Part	0.607	-	0.607
		Total :-	6306.258	5975.314		566.371	51.000	617.371
Protected Forests.								
1	Bonai	KulkuttaPF	15.338	15.338	Entire	-	15.338	15.338
2	Bonai	NuadihiPF	16.422	16.422	Entire	-	16.422	16.422
3	Bonai	Susudihi PF	7.719	7.719	Entire	-	7.719	7.719
4	Bonai	Babu-Nuagaon PF	1.228	1.228	Entire	-	1.228	1.228
5	Bonai	San-NikitimalPF	104.310	104.310	Entire	-	104.31	104.31
6	Bonai	San-SibnathpurPF	1.335	1.335	Entire	-	1.335	1.335
7	Bonai	San-SibnathpurPF	20.570	20.570	Entire	-	20.57	20.57
8	Bonai	NuadihiPF	9.618	9.618	Entire	-	9.618	9.618
9	Bonai	San-SibnathpurPF	17.850	17.850	Entire	-	17.85	17.85
10	Bonai	San-SibnathpurPF	10.800	10.800	Entire	-	10.8	10.8
11	Bonai	San-KaturidhuaPF	37.146	37.146	Entire	-	37.146	37.146
12	Tamra	BenuamPF	21.040	21.040	Entire	-	21.04	21.04
13	Tamra	BhurungPF	5.000	5.000	Entire	-	5	5
14	Tamra	TamraPF	15.621	15.621	Entire	-	15.621	15.621
15	Tamra	TamraPF	12.750	12.750	Entire	-	12.75	12.75
16	Tamra	TamraPF	23.422	23.422	Entire	-	23.422	23.422
17	Tamra	TumbeiPF	16.798	16.798	Entire	-	16.798	16.798
18	Tamra	MadhupurPF	59.437	59.437	Entire	-	59.437	59.437
19	Tamra	MadhupurPF	45.587	45.587	Entire	-	45.587	45.587
20	Kuliposh	SanjalPF	16.106	16.106	Entire	-	16.106	16.106
21	Kuliposh	FuljharPF	16.187	16.187	Entire	-	16.187	16.187
22	Kuliposh	FuljharPF	5.698	5.698	Entire	-	5.698	5.698
23	Kuliposh	BadjalPF	24.282	24.282	Entire	-	24.282	24.282
24	Kuliposh	LadapaniPF	9.162	9.162	Entire	-	9.162	9.162
25	Kuliposh	SanjalPF	14.941	14.941	Entire	-	14.941	14.941
26	Kuliposh	BankiPF	16.390	16.390	Entire	-	16.39	16.39
27	Kuliposh	SadhubahalPF	15.783	15.783	Entire	-	15.783	15.783
28	Kuliposh	BarhagudaPF	4.046	4.046	Entire	-	4.046	4.046
29	Kuliposh	KhuntgaonPF	11.068	11.068	Entire	-	11.068	11.068
		Total :-	575.654	575.654			575.654	575.654

Village Forests								
1	Bonai	Bad-Baurkela VF	5.422	5.422	Entire	5.422	-	5.422
2	Bonai	GopinathpurVF	1.934	1.934	Entire	1.934	-	1.934
3	Bonai	Kenaveta VF	3.439	3.439	Entire	3.439	-	3.439
4	Bonai	Uparbahal VF	1.092	1.092	Entire	1.092	-	1.092
5	Bonai	San BhalbunguriVF	5.058	5.058	Entire	5.058	-	5.058
6	Bonai	Govindpur VF	5.058	5.058	Entire	5.058	-	5.058
7	Bonai	Dareikela VF	1.315	1.315	Entire	1.315	-	1.315
8	Bonai	Uparpada VF	10.117	10.117	Entire	10.117	-	10.117
9	Bonai	San Gogua VF	6.070	6.070	Entire	6.070	-	6.070
10	Bonai	Babu Nuagaon VF	7.082	7.082	Entire	7.082	-	7.082
11	Bonai	Bandadihi VF	4.350	4.350	Entire	4.350	-	4.350
12	Bonai	Bad Baurkela VF	5.058	5.058	Entire	5.058	-	5.058
13	Bonai	BalitakudarVF	10.000	10.000	Entire	10.000	-	10.000
14	Bonai	Kasada VF	8.000	8.000	Entire	8.000	-	8.000
15	Tamra	BhalbunguriVF	5.977	5.977	Entire	5.977	-	5.977
16	Tamra	Khandapat VF	4.552	4.552	Entire	4.552	-	4.552
17	Tamra	Mankada Chuan VF	16.187	16.187	Entire	16.187	-	16.187
18	Tamra	BartengadaVF	4.046	4.046	Entire	4.046	-	4.046
19	Kuliposh	Kadadihi VF	2.023	2.023	Entire	2.023	-	2.023
20	Kuliposh	Ruguda VF	5.058	5.058	Entire	5.058	-	5.058
21	Kuliposh	Sihidiha VF	5.058	5.058	Entire	5.058	-	5.058
22	Kuliposh	Mahuldiha VF	1.011	1.011	Entire	1.011	-	1.011
23	Kuliposh	Ruguda VF	5.058	5.058	Entire	5.058	-	5.058
24	Kuliposh	Tankjoda VF	0.809	0.809	Entire	0.809	-	0.809
25	Kuliposh	Madhupur VF	1.416	1.416	Entire	1.416	-	1.416
26	Kuliposh	Belkudar VF	4.000	4.000	Entire	4.000	-	4.000
27	Kuliposh	Basubahal VF	3.600	3.600	Entire	3.600	-	3.600
28	Kuliposh	Gadruan VF	8.000	8.000	Entire	8.000	-	8.000
29	Kuliposh	Kanujoda VF	6.000	6.000	Entire	6.000	-	6.000
30	Kuliposh	Ruguda VF	10.000	10.000	Entire	10.000	-	10.000
31	Kuliposh	Bichhanapati VF	4.000	4.000	Entire	4.000	-	4.000
32	Kuliposh	RangamatiaVF	6.000	6.000	Entire	6.000	-	6.000
		Total :-	166.790	166.790		166.790	-	166.790
		Grand Total :-	17886.038	17432.655		1779.888	2059.952	3839.840

5.3 General Characteristics of Vegetation:

In the division, plantation activities started from the year 1964. The plantation raised upto 1973-74 were of pure teak, while the plantations raised afterwards were of mixed type where teak and other economically important species have been mixed with bamboo or other miscellaneous species. Out of these old plantations, the total area under pure teak plantation is 415.303 ha. and it is confined to few pockets of RF blocks of Amrudhi, Budhapahar, Jankinagar, Kelo 'B', Sinduria, Talita, Dhanghar, Kendrikela, Rakshi-I, Sundhikon & Baliatota.

Plantations have been raised under different schemes during the previous Plan period. These forest areas, if tended and protected have the potentiality to restock forest vegetation and improve the quality of forests. Degraded forest areas with permanent gap are devoid of any root stock. Artificial regeneration is the only means of restocking these areas.

Forests are open, scrubby and miscellaneous in composition. There is no distinct storey in most of these forest areas. Main species include *Shorea robusta*, *Terminalia tomentosa*, *Madhuca indica*, *Pterocarpus marsupium*, *Anogeissus latifolia*, *Boswellia serrata*, *Buchnanian lanzan*, *Diospyros melanoxylon*, *Terminalia chebula*, *Embllica officinalis*, *Ougenia oojeinensis*, *Bauhinia retusa*, *Woodfordia fruticosa*, *Indigofera pulchella*, *Nyctanthes arbotritis*, *Ixora arborea*, *Grewia nudiflora*, *Phoenix acaulis*, *Bauhinia vahili*, *Butea superba*, *Holarrhena antidysentrica*, and *Smilax macrophylla*, etc.

5.4 Blocks, Compartments:-Details of forest blocks and compartments included in this working circle is as shown in the table 5.2.1. There has been no change in the names of Reserve Forest blocks dealt with in the previous Plan. 18 nos of RF Blocks and 12 nos of PRF blocks, 29 nos of PF Blocks and 32 Nos of Village Forest Blocks have been brought under this Working Circle. Areas of all RF & PRF blocks have been computed from the latest topographical sheets of scale 1,50,000 in the previous Plan. Computed area of most of the RF & PRF blocks do not tally with the corresponding notified areas as

maintained in the records of Division office. The computed area has been taken into account for the purpose of formation of annual planting and tending coupes. However, notified area of all RF & PRF blocks as maintained in the records of Division office stands as it is. In the previous Plan, some compartments of few RF blocks were further divided into sub-compartments. Compartments and sub-compartments formed in the previous plan have been retained. On the basis of conspicuous topographical features, compartments have been formed and delineated in topographical maps only.

5.5 Special Objectives of Management

The special objectives of management for this Working Circle are as follows.

- i. To regenerate the barren and blank gaps and patches by planting suitable indigenous species.
- ii. To tend and improve the existing plantations through suitable silvicultural measures.
- iii. To restock the part of forest blocks which were under shifting cultivation in the past.
- iv. To improve the condition of existing forests through protection against grazing, fire and illicit felling.
- v. To provide adequate protection to the areas having rootstock and constitute JFM committee to involve the local people.
- vi. To enhance soil productivity through soil and moisture conservation measures.

5.5.1 Analysis of Crop:

The forest vegetation in the small RF blocks around Bonaigarh, i.e., Baghiakucha, Baliatota, Banarai, Chandiposh, Dharanidharpali, Gogua, Janakinagar, Kelo 'B', Kendrikela, Sundhikhon and Talita had been depleted to great extent and reduced to scrubby type of growth. In the last plan, a good number of plantations have been taken up in the degraded patches of these blocks. At present the growth of natural vegetation in these blocks is very poor and limited in extent and most of the vegetative cover is of artificial nature.

The vegetation, in Amrudhi PRF and Nalghati-Rajabasa PRF is primarily of miscellaneous type with poor growth. The low lying area and lower slopes of Talbahali-Barhaguda PRF is mainly covered with dry peninsular sal type of forest, while upper slopes and hill tops of the block is covered with dry mixed deciduous forest.

Areas, where the plantations have been raised in the past are also more or less in poor state with inadequate vegetative growth. Most of the plantations have not been subjected to regular weeding, cleaning and thinning operations. The planted species in these blocks are mainly Teak, Sissoo, Rosewood, Gambhar, Cassia, Acasia, Cashewnut, Asan, Bamboo, Eucalyptus, Siris, Karanja, Tendra, Neem etc.

5.5.2 Silvicultural System: No silvicultural system is prescribed. Pure block plantation through artificial regeneration will be done in the available blanks of minimum 4.0 hact. It is a fact that it is difficult to get virgin bigger size blank patch for raising plantation. Therefore, necessary site preparation work has to be taken up by removing the weeds and unwanted species so that there is no competition with the seedling to be planted. The decision for the type and nature of site preparation will be taken by the DFO which will be site specific and it is not possible to generalize the same here.

5.5.3 Planting Cycle: Planting cycle of 10 years is prescribed to be synchronized with the Plan period.

5.5.4. Plantation treatment series:- To implement the prescription of the Working Circle over area allotted to the Working Circle, 3 (three) nos of Planting series have been constituted the details of which is given in the following **Table No.5.5.4.1.**

Table No.5.5.4.1					
Forest Blocks and area allotted to different Planting Series					
Sl. No.	Name of Plantation Series	Name of Forest Blocks	Compartment No.	Area in ha.	Total area in ha.
2	Mahulpada	Talbahali- Barhaguda PRF	Part	100.000	609.860
		Ruguda, Sihidiha, Mahuldiha, Basubahal & Gadruan VFs	Entire	37.785	
		Mahulpada RF	8(a), 9(a) & 10(a)	350.897	
		Madhupur, Kadodihi, Tankjoda, Rangamatia, Belkudar, Kanujoda, Bichhnapati VFs	Entire	24.248	
		Amrudi PRF	Part	94.000	
		Khandadhar PRF	Part	2.930	
4	Dharanidharpali	Dharanidharpali RF	Part	28.066	433.492
		Baghiakucha RF	Part	30.000	
		Gogua RF	Part	96.121	
		Kello-B RF	Part	30.000	
		Talita RF	Part	28.983	
		Bad-Baurkela, Kenaveta, Gopinathpur, Uparbahal, San-Bhaludunguri, Govindpur, Dareikela, Uparpada, San-Gogua, Babu-Nuagaon, Bondodihi, Balitakudar & Kasada VFs	Entire	73.995	
		Nalaghati – Rajabasa PRF	Part	100.000	
		Raipiri-II PRF	Part	5.688	
		Balia-II PRF	Part	6.357	
		Majurdima (B) PRF	Part	0.607	
		Kello PRF	Part	2.913	
		Bhaldunguri, Khandapat, Mankadchuan, Bartengda VFs	Entire	30.762	
5	Mendhamarini	Toda-I PRF	Entire	47.063	736.536
		Toda-II PRF	Entire	90.938	
		Bhawanipahar RF	Part	128.187	
		Mendhamarini-II PRF	Part	115.875	
		Mendhamarini RF	1 part	100.187	
		Rakshi-I RF	4 (a) and 7	254.286	
Total:-				1779.888	1779.888

5.5.5 Annual Coupes of Planting Series:-

Each Planting Series has been divided in to 10 annual coupes to cover the area of the series in the Plan period. The details of annual coupes are given below in table 5.5.4.2.

Table 5.5.4.2- Planting Series							
1-Mahulpada Planting Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Kuliposh	Talbahali-Barhaguda	PRF	Part	50.000	56.225
			Madhupur	VF	Entire	1.416	
			Belkudar	VF	Entire	4.000	
			Tankajoda	VF	Entire	0.809	
2022-23	II	Kuliposh	Talbahali-Barhaguda	PRF	Balance	50.000	70.116
			Ruguda	VF	Entire	5.058	
			Ruguda	VF	Entire	5.058	
			Ruguda	VF	Entire	10.000	
2023-24	III	Kuliposh	Mahulpada	RF	8(a) Part	69.142	69.142
2024-25	IV	Kuliposh	Mahulpada	RF	8(a) Part	65.000	65.000
2025-26	V	Kuliposh	Mahulpada	RF	8(a) bal	65.000	65.000
2026-27	VI	Kuliposh	Mahulpada	RF	9(a) Part	57.772	57.772
2027-28	VII	Kuliposh	Mahulpada	RF	10(a)	63.983	63.983
2028-29	VIII	Kuliposh	Amrudhi	PRF	Part	50.000	56.069
			Mahuldiha	VF	Entire	1.011	
			Sihidiha	VF	Entire	5.058	
2029-30	IX	Kuliposh	Amrudhi	PRF	Part	44.000	52.023
			Kadodihi	VF	Entire	2.023	
			Kanujoda	VF	Entire	6.000	
2030-31	X	Kuliposh	Khandadhar	PRF	Part	2.930	54.530
			Mahulpada	RF	9(a) (bal)	30.000	
			Basubahal	VF	Entire	3.600	
			Godruan	VF	Entire	8.000	
			Bichhnapati	VF	Entire	4.000	
			Rangamatia	VF	Entire	6.000	
					Total :-	609.860	609.860

2- Dharanidharpali Planting Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Bonai	Dharanidharpali	RF	Part	28.066	38.546
			Bad-Baurkela	VF	Entire	5.422	
			Bad-Baurkela	VF	Entire	5.058	
2022-23	II	Bonai	Baghiakucha	RF	Part	30.000	42.051
			Gopinathpur	VF	Entire	1.934	
			Uparpada	VF	Entire	10.117	
2023-24	III	Bonai	Kello-B	RF	Part	30.000	38.497
			Kenaveta	VF	Entire	3.439	
			Govindpur	VF	Entire	5.058	
2024-25	IV	Bonai	Gogua	RF	Part	50.000	50.000
2025-26	V	Bonai	Gogua	RF	Bal.	46.121	46.121
2026-27	VI	Bonai	Talita	RF	Part	28.983	42.518
			Uparbahal	VF	Entire	1.092	
			San-Bhaldunguri	VF	Entire	5.058	
			Dareikela	VF	Entire	1.315	
			San-Gogua	VF	Entire	6.070	
2027-28	VII	Tamra	Nalghati-Rajabasa	PRF	Part	40.000	40.000
2028-29	VIII	Tamra	Nalghati-Rajabasa	PRF	Part	40.000	44.046
			Bartengda	VF	Entire	4.046	
2029-30	IX	Tamra	Nalghati-Rajabasa	PRF	Bal.	20.000	46.716
			Bhaldunguri	VF	Entire	5.977	
			Khandapat	VF	Entire	4.552	
			Mankarchuan	VF	Entire	16.187	
2030-31	X	Bonai	Babu-Nuagaon	VF	Entire	7.082	44.997
			Bondodihi	VF	Entire	4.350	
			Balitikudar	VF	Entire	10.000	
			Kasada	VF	Entire	8.000	
		Jarda	Raipiri-II	PRF	Part	5.688	
			Balia-II	PRF	Part	6.357	
			Majurdima (B)	PRF	Part	0.607	
			Kello	PRF	Part	2.913	
					Total :-	433.492	433.492

3 - Mendhamaruni Planting Series							
Year of Working	Coupe No.	Range	Forest Block	Status	Compartment and Sub-Compartment No.	Area (in ha.)	Area or Coupe to be rehabilitated (in ha.)
1	2	3	4	5	6	7	8
2021-22	I	Koira	Toda-I	PRF	Entire	47.063	47.063
2022-23	II	Koira	Toda-II	PRF	Entire	90.938	90.938
2023-24	III	Koira/ Barsuan	Bhabanipahar	RF	Part	68.187	68.187
2024-25	IV	Koira/ Barsuan	Bhabanipahar	RF	Part	60.000	60.000
2025-26	V	Koira	Mendhamarini	RF	1 part	100.187	100.187
2026-27	VI	Koira	Mendhamarini-II	PRF	Part	115.875	115.875
2027-28	VII	Koira	Rakshi-I	RF	R.I. 4 (a) (bal) & 7 (part)	63.286	63.286
2028-29	VIII	Koira	Rakshi-I	RF	R.I. 4 (a) (bal) & 7 (part)	64.000	64.000
2029-30	IX	Koira	Rakshi-I	RF	R.I. 4 (a) (bal) & 7 (part)	64.000	64.000
2030-31	X	Koira	Rakshi-I	RF	R.I. 4 (a) (bal) & 7 (part)	63.000	63.000
					Total :-	736.536	736.536

5.6. Method of execution of Planting:

5.6.1 Method of Execution of Planting:-

For execution of plantation activity, following guidelines are to be observed.

1. The monoculture is to be avoided as far as possible in favour of mixed plantations.
2. The species which are natural to the site are to be selected for plantation, i.e. site specific species are to be preferred.
3. While deciding the choice of species for plantation purpose, the needs and requirements of the local inhabitants in respect of small timber, firewood, fodder etc. are to be given due consideration.
4. Wherever possible, the broadcasting of the seeds of grasses having high nutritive value like chrysopogon, Eulaliops, Eragrostio, Sehima, Sporobolus, Themeda, Cynodon and Vetiveria etc. may be taken up as apart of plantation.
5. Fruit bearing and NTFP and fodder yielding species should have adequate representation in all categories of areas where plantation is to be taken-up.
6. Teak should be either mixed with other economically important species or with bamboo in bamboo bearing areas or with Simul in degraded areas.
7. Teak, Sissoo, Simul, and bamboo are the species suitable for the terrain having plain to gentle slope with deep sandy loam type of soil.
8. Sissoo, Arjun, Jamun, Babul, Karanj, Tendra and Simul are the species suitable for the low-lying areas having high moisture content.
9. Neem, Siris, Mahaneem, Asan, Anla, Chakunda etc. are the species suitable for undulating terrain.
10. In areas subjected to uncontrolled overgrazing, non browsable species like *Cassia siamea*, *Eucalyptus teriticornis*, *Acacia auriculiformis*, *Acacia nilatica*, *Agave Sisalena*, *Euphorbia Spp* etc. are to be given due consideration. Likewise in areas subjected to recurring annual fire, species like *Dalbergia Sissoo*, *Cleistanthus collinus*, *Eucalyptus hybrid*, *Cassia siamea*, *Tectora grandis*, *Gmelina arborea* may be preferred.

Areas completely barren, blank, eroded and degraded having plain to gentle slope are to be restocked by taking following Planting operations :-

1. Planting of fast growing leguminous species like Acacia, Cassia, Subabul etc.
2. Planting of species like Ailanthus, Siris, Karada, Sidha, Neem, Chakunda, Kusum, Sissoo etc. in the plain barren areas.
3. Planting of Babul, Khair, Rohini, Sabai grass etc in the eroded patches.
4. Planting of Jamun, Karanja, Arjun etc. in the low lying degraded patches having higher moisture content.
5. Planting of bamboo wherever possible.
6. While carrying out plantation activity in these areas, the plants spacing should be relatively close, i.e. 2m X 2m for tree species and 6m X 6m for bamboo.

In old Plantation areas , tending and thinning operations required are to be carried out for improving the growing stock. In such areas. , enrichment plantation of Sissoo, Teak, Piasal and Bamboo is to be taken up in the gaps.

5.6.2 Demarcation of Annual Plantation Areas: For the purpose of plantation, the timely identification and demarcation of the suitable patches is a prerequisite. Patches selected for block plantations should have at least 4.0 ha. area. When the selected patches have large area, then they are to be divided into sections of 4.0 ha. each with 3.0m wide section line and 4.0 m wide section path. This covers completely barren, blank, eroded and degraded patches having plain to gentle slope.

5.6.3 Site Clearance: The clearance of plantation site is to be done during the month of February. All the undesirable bushy growth which may hamper the growth of future plantation are to be removed except sapling, poles and trees of Sal, Bija, Bandhan, Asan, Gambhar and other useful species. The retained sapling and poles are to be pruned upto $2/3^{\text{rd}}$ of the height. The site selected for plantation is to be given minimum two-three control burning without causing any harm to the retained growing stock.

5.6.4 Staking &Pitting:-

For the proper alignment and spacing of rows in the planting site, staking is essential. The planting spots or soil working spots are to be marked with the help of sticks made of bamboo or other locally available materials. Staking is to be done at a spacing of 2.5m X 2.5m or 2m X 2m depending upon the degree of degradation. When the selected site is having large area then 80th stake line in either direction should be left blank so as to form 4.0 hectare section.

Once staking operation is completed, pitting operation is to be taken up in the spots marked for planting. The pits of size 30cm X 30cm X 30cm or 45cm x 45cm x 45cm are to be dug. The dug-out soil is to be piled on two sides of the pits for proper watering. Before planting, the dug-out soil may be treated with fertilizers. While planting seedlings in the pits, the upper half dug out soil is to be filled first than the lower half. Staking and pitting operations are to be completed by May.

5.6.5 Nursery:-

5.6.5.1 Collection of Seeds :- While preparing treatment map, the assessment of the seedlings to be raised in the nursery for ANR gap and block plantation purpose should be made and accordingly an estimate of required quantity of seeds of various species is to be prepared. As per their viability, the seeds for the various species are to be procured well before actual sowing. Seeds so procured should be of good quality. As per the requirement, specific seed treatment is to be given to different types of seeds. The Teak seed may be treated by alternate soaking and drying method for 21 days. The cowdung may be mixed while soaking. The treatment of teak seeds should start in the first week of May so that treated seeds are ready for sowing during June.

5.6.5.2 Preparation of Nursery Beds: For raising seedlings of various important species, the Division should have permanent nursery in each Range. In permanent nursery, the beds are to be prepared by ploughing the area upto 30cm depth. The prepared beds are then to be mixed with farm yard manure or with suitable fertilizers. The size of beds

should be approximately 12m x 1.2m. The work in regards of preparation of nursery beds should commence from the first week of January. As per requirement, temporary nurseries are also to be prepared at the site of plantations. The work for preparing temporary nursery should start from 1st week of January with the clearance of site, fencing, polythene bag filling and seed dibbling operations one after another. These operations should be completed by the end of February.

5.6.5.3 Sowing of seeds and Raising of seedlings:

Seedlings of species which are slow growing or whose seeds are having low viability are to be raised in permanent nurseries. The planting stock of species which are fast growing and whose seeds are having relatively long viability are to be raised in the temporary nurseries.

All the raised plantations are to be reflected in the stock map of scale 1:50,000. The detail of plantations is to be mentioned in the plantation journal and respective compartment history. At the prominent locations of all plantations site, sign boards depicting the name of block/ compartment, year of planting, spacing, species and other relevant details should be displayed.

All the provisions prescribed in the Forest Plantation Manual 1977 as amended time to time are to be followed in raising plantations.

5.6.5.4 CALENDAR OF OPERATION: Since plantation activity is a time bound work and largely dependent on monsoon and weather, time schedule is prescribed which shall be strictly adhered to. Calendar of operations are as shown in **Table 5.6.5.4.1** and schedule of planting operations have briefed in **Table 5.6.5.4.2**

Table No 5.6.5.4.1 Calendar of operation		
Sl. No.	Name of operation	Time period
1	Communication of target to the Range Officer	Before September of pre-formation year.
2	Demarcation of annual plantation coupe	September pre-formation year
3	Preparation of treatment map and treatment plan by R.O	October of pre-formation year
4	Approval of treatment map and treatment plan by D.F.O and its communication to R.O	December of pre-formation year
5	Preparation of site, stacking and pitting	January of pre-formation year
6	Raising of nursery including seed collection	December-March of pre-formation year
7	Planting	July of formation year
8	Casualty replacement	Mid August of formation year
9	First weeding and manuring	August of formation year
10	Soil working and application of fertilizer and insecticide	September
11	Second weeding	October
12	Mulching and construction of soil and water conservation measures	November-December
13	Fire tracing and inspection path	January-February
2nd year operation		
1	Casualty replacement	July
2	Weeding soil working and fertilizer application	August-September
3	Pruning	November
3rd year operation		
1	Pruning and shrub cutting	October-November
2	Fire tracing and inspection path	December

Table No 5.6.5.4.2 Schedule of Planting operations	
Operations	Period of Completion
Advance preparation of site	End of October
Stacking	End of February
Digging of pits	End of February
Plantation And Post Plantation Operation in 1st Year	
Pre-sprouted poly potted stump planting	1 st week of July
Casualty replacement	End of July
1 st soil working, weeding & manuring	End of August
2 nd soil working and weeding	During October
3 rd soil working	During December
Post Plantation Operation in 2nd Year	
Casualty replacement, 1 st weeding, soil working & manuring	End of July
2 nd weeding and soil working	During October
Post Plantation Operation in 3rd and subsequent Years	
Soil working and casualty replacement	End of July
Pruning and singling	September

5.6.5.5 Tending in Existing Plantation:

Tending series has been made by taking old plantation areas of 2,059.952 ha. as indicated vide Table 5.2.1 above.

Due to biotic interference and poor adaphic nature, full stocking is absent in most of the plantations raised in the past and the planted crop is in general quite open. Most of the plantations raised during the period of last plans are of mixed type. Out of these reasons, it is difficult to prescribe any set schedules of thinning for most of the old plantations. However, thinning operations are necessary for the improvement of growing plantation stock. Thinning is to be carried out only if necessary on silviculture grounds.

For the pure teak plantations, thinning is to be carried out in the 7th, 13th, 20th, 30th and 45th year of the plantation. First two thinning will be mechanical in nature and will involve the removal of alternating diagonals and alternating rows of trees respectively. The last three thinning will be silvicultural, ordinary 'C' grade type and will involve the removal of dead, diseased, moribund, suppressed, dominated and defective dominant trees without creating lasting gaps in the canopy. At the time of thinning, operations like climber cutting, singling out of shoot, pruning etc. are also to be taken up. Tending operations are to be executed in such a manner so as to encourage the growth of ground flora and middle storey in the teak plantations

In the plantations where teak and other important timber species like- Sissoo, Rose wood, Gambhar etc. have been mixed with Bamboo, thinning is to be carried out in the 8th, 16th, 28th and 40th year of plantation. This thinning schedule has been fixed keeping in view 4 years cutting cycle of bamboo. The first two thinning will be silvicultural ordinary 'C' grade type and under which dead, diseased, moribund, suppressed, dominated and defective dominant trees are to be removed without creating lasting gaps in the canopy. The 4th thinning will also be silvicultural ordinary 'C' grade type. In case when there is gregarious Bamboo flowering or when the stocking is poor and crop is open, the 4th thinning will not be carried out.

In the mixed plantation, the first thinning will be carried out in 8th year and will be mechanical in nature. However, in most of the mixed plantations 1st thinning may not be required. The 2nd thinning will be silvicultural ordinary 'C' grade type and is to be carried out in the 15th year of the plantation. The 3rd and 4th thinning will be selective in nature and are to be carried out in the 25th and 40th year of plantation. The thinning operation in mixed plantations are to be regulated and executed in such a manner so as to have suitable proportion of various important species at every stage till harvesting.

All thinning operations are to be carried out only if required on silvicultural grounds and under the direct supervision of the Range Officer. In plantations having predominance of fruit bearing, fodder and NTFP yielding species, no thinning need to be carried out. Crop in such type of plantation are to be removed only when they are dead, dying or diseased.

List of old Plantations due for tending during the proposed Working Plan period is as shown in the **table 5.6.5.5.1**

Table 5.6.5.1- Forest Blocks and areas allotted to different Tending Series

Range	Name of Plantation	Area Planted in ha.	Year of planting	Comp./ Sub.- Comp. No.	Year of Tending operation									
					2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
					I	II	III	IV	V	VI	VII	VIII	IX	X
Bonai	Babu-Nuagaon PF	1.228	2020-21	Entire								1.228		
Bonai	Baghiakucha RF	43.363	2010-11	Part			43.363							
Bonai	Baliatota RF	46.945	1989-90	Entire										46.945
Bonai	Bonrai RF	66.775	1995-96	Entire					66.775					
Bonai	Budhapahad RF	7.285	1971-72	4(a)									7.285	
Bonai	Chandiposh RF	61.918	1995-96	Entire					61.918					
Bonai	Dharanidharpali RF	150.000	2014-15	Entire		150.000								
Bonai	Gogua RF	35.000	1995-96	Entire					35.000					
Bonai	Janikinagar RF	95.913	1981-82	Entire						95.913				
Bonai	Kello-B RF	77.204	1995-96	Entire			77.204							
Bonai	Kello-B RF	100.000	1984-85	Entire				100.000						
Bonai	Kendrikela RF	195.091	2014-15	Part	195.091									
Bonai	Kulkutta PF	15.338	1988-89	Entire								15.338		

Bonai	Nuadihi PF	9.618	2013-14	Entire	9.618								
Bonai	Nuadihi PF	16.422	2011-12	Entire						16.422			
Bonai	San-Katuridhua PF	37.146	2015-16	Entire			37.146						
Bonai	San-Nikitimal PF	104.310	2010-11	Entire					104.310				
Bonai	San-Sibnathpur PF	17.850	2013-14	Entire	17.850								
Bonai	San-Sibnathpur PF	1.335	2010-11	Entire					1.335				
Bonai	San-Sibnathpur PF	20.570	2010-11	Entire					20.570				
Bonai	San-Sibnathpur PF	10.800	2010-11	Entire					10.800				
Bonai	Sinduria RF	110.724	1970-71	1(a)									110.724
Bonai	Sundhikon RF	62.323	1985-86	Entire									62.323
Bonai	Susudihi PF	7.719	2018-19	Entire					7.719				
Bonai	Talita RF	73.000	1984-85	Entire			73.000						
Bonai	Hulku RF	30.757	2016-17	Part			30.757						
Koira	Budhapahar A PRF	20.000	2011-12	Entire						20.000			
Koira	Mendhamaruni RF	125.000	1994-95	1 Part			125.000						
Koira	Mendhamaruni-II PRF	25.000	1993-94	Entire			25.000						
Koira	Rakshi-I RF	29.000	1987-88	4 (a), 7									29.000

Koira/ Barsuan	Bhabanipahar RF	33.000	2011-12	Part				33.000						
Kuliposh	Amrudhi PRF	6.000	2011-12	Part				6.000						
Kuliposh	Badjal PF	24.282	2010-11	Entire						24.282				
Kuliposh	Banki PF	16.390	2012-13	Entire								16.390		
Kuliposh	Barhaguda PF	4.046	2012-13	Entire								4.046		
Kuliposh	Fuljhar PF	16.187	2015-16	Entire			16.187							
Kuliposh	Fuljhar PF	5.698	2010-11	Entire						5.698				
Kuliposh	Khuntgaon PF	11.068	2015-16	Entire			11.068							
Kuliposh	Ladapani PF	9.162	2010-11	Entire						9.162				
Tamra	Madhupur PF	45.587	2011-12	Entire							45.587			
Kuliposh	Mahulpada RF	90.000	2010-11	3(a), 4(a)						90.000				
Kuliposh	Sadhubahal PF	15.783	2012-13	Entire								15.783		
Kuliposh	Sanjal PF	16.106	2015-16	Entire			16.106							
Kuliposh	Sanjal PF	14.941	2010-11	Entire						14.941				
Tamra	Benuam PF	21.040	1989-90	Entire									21.040	
Tamra	Bhurung PF	5.000	2008-09	Entire				5.000						

Tamra	Madhupur PF	59.437	2011-12	Entire							59.437			
Tamra	Tamra PF	15.621	2011-12	Entire							15.621			
Tamra	Tamra PF	23.422	2002-03	Entire										23.422
Tamra	Tamra PF	12.750	1988-89	Entire								12.750		
Tamra	Tumbei PF	16.798	2004-05	Entire										16.798
	Total :-	2059.952			222.559	150.000	256.831	342.000	163.693	384.730	157.067	65.535	28.325	289.212

5.6.6 Associated Regulations and Measures: During implementation of this plan, all plantation journals should not only show the expenditure incurred in raising plantation but should also have records of all information relating to the technique used, date of planting and other cultural operations. The observation on growth, mortality, insect attack and damage should also be recorded in the plantation journal. It should also reflect the observations of inspecting officers.

CHAPTER -6

BAMBOO (OVERLAPPING) WORKING CIRCLE

6.1 Bamboo (Overlapping) Working Circle: This is an overlapping Working Circle which has been prescribed for production and sustainable harvesting of Bamboos in the division area through suitable silvicultural measures. Harvesting of Bamboos following specified silvicultural principles, simultaneous Silvicultural Operation in Bamboo forests, Plantation of Bamboos in suitable areas, are the activities prescribed in this Chapter. This overlapping Working Circle has been clearly marked in the Management Maps (1:50,000 scale.). Forest areas covered under this Working Circle are given in para 5.2.

6.2. General Constitution Working Circle: The bamboo bearing areas of the Selection Working Circle and Rehabilitation Working Circle have been brought under this Bamboo (OL) Working Circle. Areas allotted to Bamboo (OL) Working Circle in the previous Working Plan are again brought under this Working (Overlapping) Circle in the present Plan. In total 26 nos of RF and PRF Blocks have been brought under this Working Circle and the total area allotted is 65082.505 ha. Details of Forest Blocks, Compartments and areas allotted to Bamboo (OL) Working Circle are shown in the following **Table No.6.2.1**

Table No.6.2.1.-Forest Blocks allotted to Bamboo (Overlapping) Working Circle.						
Sl. No.	Range	Name of the Forest Block	Area in ha. as per Govt. Notification	Computed area in ha. taken for management	Compt/Sub-compart No.	Area Allotted (in.Ha.)
1	2	3	4	5	7	8
1	Bonai	Budhapahad RF	1041.278	1071.750	1,2,3&4(b)	1064.465
2	Bonai	Sinduria RF	1144.880	1144.881	1(b),2,3,4&5	1034.157
3	Kuliposh	Lunga RF	5284.176	5242.146	3,5,7,9,10,11& 12	1528.709
4	Kuliposh	Mahulpada RF	4734.925	4565.000	1(b), 2(b), 3(b), 4(b), 5(b), 6(b), 7, 8(b), 9(b) &10(b)	3402.550

5	Bonai/ Jarda	Ulsura RF	1420.477	1400.061	1(b), 1(c), 3(b), 3(c), 4(b), 5, 6(b), 6(c), 7, 8(a), & 8(b)	1387.192
6	Jarda	Balia RF	1499.797	1435.813	1,2,3&4	1435.813
7	Jarda	Raipiri RF	6617.563	6614.326	1,2,3,4,5,6,7,8,9, 10,11,12,13,14, 15, 16,17&18	6614.326
8	Jarda/ Sole	Majurdima RF	3294.617	3339.250	1,2,3,4,5,6,7&8	3338.764
9	Jarda	Kello 'A' RF	1872.521	2041.978	1,2,3,4&5	2041.978
10	Sole/ Jarda	Kantamunda RF	4410.764	4349.688	1,2,3,4,5,6,7,8,9,10 &11	4348.284
11	Sole	Balai RF	3466.693	3416.313	1,2,3,4,5,6,7(b),8(b) & 9	3294.678
12	Sole	Jada RF	1762.120	1714.500	1,2,3,4,5,&6	1714.500
13	Sole	Sirgida RF	4538.648	4393.563	1,2(a),2(b),3,4,5, 6(a),6(b),7,8,9, 10(a),10(b),11,12,13 &14	4392.390
14	Sole	Kunjar RF	4946.985	4924.687	1,2(b),3(b),3(c),4(b), 5,6,7,8,9, 10,11&12	4589.335
15	Sole	Solguda RF	2730.068	2730.068	1,2,3,4(b),4(c),5(a), 5(b), 6(b), 7(b) & 8	2505.208
16	Tamra/ Jarda	Rushimath RF	6741.533	6712.567	1,2,3,4,5,6,7(b),8(b), 9,10,11(b),12(b),13, 14,15&16	6665.423
17	Tamra	Dhenkiam RF	6553.233	6398.358	1,2,3(b),4,5(b), 6(b),7(b),8(b),9,10,1 1,12,13,14,15,16(b), 17(b), 18(b),18(c),19(a),19(b),20(b) & 21(b)	5673.877
18	Tamra	Gurundia RF	2531.606	2514.282	1,2,3,4,5,6&7	2514.282
19	Tamra	Kusumdihi RF	5445.973	5277.124	1,2,3,4,5,6,7,8,9(b), 10,11(b),12,13,14,1 5,16&17	5225.261
20	Sole	Kantamunda-I PRF(Part-I)	474.463	289.750	Entire	289.500

21	Sole	Kantamunda-I PRF (Part-II)	-	229.750	Entire	229.750
22	Sole	Mahuldihi - I & II PRF	522.055	544.499	Entire	316.687
23	Sole	Sirgida PRF	55.685	73.312	Entire	73.312
24	Sole	Solguda PRF	62.614	62.812	Entire	62.812
25	Sole	Balai PRF	79.384	88.500	Entire	88.500
26	Tamra	Kusumdihi – III PRF	396.843	345.251	Entire	345.251
27	Tamra	Gurundia PRF	1498.280	905.501	Entire	905.501
Total			73127.181	71825.480		65,082.505

6.3. General Characteristics of Vegetation.

Bamboos are mostly confined to the forests of west Bonai where the soil is not very fertile and climatic conditions are rather hot and dry. The availability of bamboos is very poor and in many places it is practically absent in forests of East Bonai where good soil cover and moist climate supports luxuriant Sal forests. Three species of bamboos, viz. Salia bamboo (*Dendrocalamus strictus*), daba bamboo (*Bambusa arundinacea*) and Dungi bamboo (*Cephalostachium pergracile*) are mainly found in this Division. Out of these, Salia bamboo occurs over extensive areas in substantial quantities. Occurrence of Daba bamboo (*Bambusa arundinacea*) is very rare and is mostly available in areas adjoining villages where it has been planted by the villagers for meeting their needs and requirements. The Dungi bamboo (*Cephalostachium pergracile*) occurs mainly along nala banks and in the moist pockets of RF blocks Raipiri, Kunjar and Majurdima. Mainly, Bamboo growth is confined to middle and upper slopes while the foot hills and valley portions contain very little or no bamboo growth and the bamboo is of Quality II to III.

The Salia bamboo occurs extensively as an under storey in the forests of west Bonai where soil is relatively less fertile and supports a dry type of vegetation. In the areas of west Bonai its occurrence is more prominent in the higher slopes and at some of the higher elevations it almost forms pure crop. However, it has gradually

diminishing growth in the lower hill slopes and valleys and disappears completely wherever the canopy is closed. In the east Bonai, the growth of Salia bamboo is confined to a few portions only. In these, it is mainly available in the middle and upper slopes of Mahulpada RF & Lunga RF.

Forest types in which bamboo occurs are Dry peninsular Sal (5B/Cle), Northern dry mixed deciduous Sal (5B/C2) and Dry bamboo brakes (5E/9).

Bamboo has been exploited unscientifically in the past. While easily accessible forest areas were over exploited, the difficult hilly terrains, Left Wing Maoist affected and inaccessible areas were either under exploited or left without working. This has adversely affected the growth of bamboo clumps. Most of the clumps on an average do not contain minimum number of culms required for healthy growth of rhizomes.

6.4. Cutting Series.

For implementation of the prescriptions of Bamboo Working Circle, 9nos of cutting series have been constituted. Those are:-

1. Mahulpada Cutting Series,
2. Ulsura Cutting Series,
3. Kantamunda Cutting Series,
4. Kello Cutting Series,
5. Kunjur Cutting Series,
6. Sirigida Cutting Series,
7. Dhenkian Cutting Series,
8. Kusumdihi Cutting Series and
9. Rushimath Cutting Series.

Forest Blocks and Compartments allotted to different Cutting Series are given in **Table No.6.4.1.**

Table No.6.4.1 Blocks and Compartments allotted to different Cutting Series.					
Name of Range	Name of cutting series	Name of forest block	Comptt. And sub-comptt. No.	Area of comptts. And sub-comptts (in ha.)	Area of cutting series (in ha.)
1	2	3	4	5	6
Kuliposh	Mahulpada	Mahulpada RF	1 (b), 2 (b), 3 (b), 4 (b), 5 (b), 6 (b), 7, 8 (b), 9 (b) & 10 (b)	3402.550	4931.259
		Lunga RF	3, 5, 7, 9, 10, 11 & 12	1528.709	
Bonai/Jarda	Ulsura	Ulsura RF	1 (b), 1 (c), 3 (b), 3 (c), 4 (b), 5, 6 (b), 6 (c), 7, 8 (a) & 8 (b)	1387.192	4921.627
		Balia RF	1, 2, 3 & 4	1435.813	
		Budhapahad RF	1, 2, 3 & 4 (b)	1064.465	
		Sinduria RF	1 (b), 2, 3, 4 & 5	1034.157	
Jarda/Sole	Kantamunda	Kantamunda RF	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11	4348.284	8567.399
		Balai RF	1, 2, 3, 4, 5, 6, 7 (b), 8 (b) & 9	3294.678	
		Balai PRF	Entire	88.500	
		Kantamunda-I (Part-I) PRF	Entire	289.500	
		Kantamunda-I (Part-II) PRF	Entire	229.750	
		Mahuldihi (I & II) PRF	Entire	316.687	

Jarda	Kelo	Kelo 'A' RF	1, 2, 3, 4 & 5	2041.978	11995.068
		Majurdima RF	1, 2, 3, 4, 5, 6, 7 & 8	3338.764	
		Raipiri RF	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 & 18	6614.326	
Sole	Kunjar	Kunjar RF	1, 2 (b), 3 (b), 3 (c), 4 (b), 5, 6, 7, 8, 9, 10, 11 & 12	4589.335	8871.855
		Jada RF	1, 2, 3, 4, 5 & 6	1714.500	
		Suluguda RF	1, 2, 3, 4 (b), 4 (c), 5 (a), 5 (b), 6 (b), 7 (b) & 8	2505.208	
		Suluguda PRF	Entire	62.812	
Sole	Sirigida	Sirigida RF	1, 2 (a), 2 (b), 3, 4, 5, 6 (a), 6 (b), 7, 8, 9, 10 (a), 10 (b), 11, 12, 13 & 14	4392.390	4465.702
		Sirigida PRF	Entire	73.312	
Tamra	Dhenkiam	Dhenkiam RF	1, 2, 3 (b), 4, 5 (b), 6 (b), 7 (b), 8 (b), 9, 10, 11, 12, 13, 14, 15, 16 (b), 17 (b), 18 (b), 18 (c), 19 (a), 19 (b), 20 (b) & 21 (b)	5673.877	5673.877
Tamra	Kusumdihi	Kusumdihi RF	1, 2, 3, 4, 5, 6, 7, 8, 9 (b), 10, 11 (b), 12, 13, 14, 15, 16 & 17	5225.261	5570.512
		Kusumdihi-PRF III	Entire	345.251	

Tamra/ Jarda	Rushimath	Rusimath RF	1, 2, 3, 4, 5, 6, 7 (b), 8 (b), 9, 10, 11 (b), 12 (b), 13, 14, 15 & 16	6665.423	10085.206
		Gurundia RF	1, 2, 3, 4, 5, 6 & 7	2514.282	
		Gurundia PRF	Entire	905.501	
		Total area under bamboo (overlapping) working circle :		65082.505	65082.505

6.5 Blocks and Compartments: Details of Blocks and compartments allotted to this working circle has provided in table 6.2.1. There has been no change in the names of Reserve Forest blocks dealt with in the previous Plan. 27 nos of RF and PRF blocks have been brought under this Working Circle. Areas of all RF & PRF blocks have been computed from the latest topographical sheets of scale 1:50,000 in the previous Plan. Computed area of most of the RF & PRF blocks do not tally with the corresponding notified areas as maintained in the records of the Division office. The computed area has been taken into account for the purpose of formation of annual bamboo coupes. However, notified areas of all RF & PRF blocks as maintained in the records of Division office stands as it is. In the previous Plan, some compartments of few RF blocks were further divided into sub-compartments. The compartments and sub-compartments formed in the previous plan have been retained. On the basis of conspicuous topographical features, compartments have been formed and delineated in topographical maps only

6.6. Special Objectives of Management:

The special objectives of the management of the Bamboo (Overlapping) Working Circle are as follows: -

- (i) To ensure systematic management of the bamboo forests to obtain sustained yield along with treatment through intensive SSO works, fire protection works, and soil and moisture conservation works.
- (ii) To meet the demand of the local people and artisans from the depots of the Orissa Forest Development Corporation.

- (iii) To meet the demand of raw materials for the paper mills.
- (iv) To ensure employment to forest dwellers and local people.
- (v) To apply proper silvicultural principles while working bamboo forests in order to secure sustained yield along with improvement of quality and quantity of bamboo clumps.
- (vi) To rehabilitate the degraded bamboo areas through tending, cleaning and bamboo planting, etc.

6.6.1. Analysis of Crop:

In the forest blocks of Budhapahad RF, Lunga RF, Mahulpada RF, Sinduria RF, Ulsura RF, Balia RF, Kantamunda RF, Kunjar RF, Majurdima RF, Raipiri RF, Srigida RF, Solguda RF, Kunjar RF, Sirgida PRF, Balei RF, Gurundia RF, the growth and availability of Salia Bamboo is quite good and most of the clumps in these blocks confirms to quality-II. In most of the blocks / Comptt.the Bamboo growth finds its occurrence to middle and upper slopes while the foot hill and valley portions contain very little or no bamboo growth.

In the forest blocks of Jada RF, Kantamunda I (Part) PRF, Solguda PRF, Dhenkiam RF, Rushimath RF the growth of salia bamboo is of medium type confirming to quality-III. The bamboo clumps occurrence mostly in hill slopes and hill tops of these blocks and in dry area down to the plain of these blocks. In the forest blocks are Kello RF (A), Balei PRF, Kantamunda P-I & Part-II PRF, Mahuldihi PRF (I), Kusumdihi RF and Kusumdihi PRF-III.

Salia Bamboo is the main species that occurs over the entire area allotted to the working circle except for the moist localities along the perennial nallas where daba bamboo (*Bumusa arundinacea*) grows. The growth of daba bamboo is very rare and is mostly available in the areas adjoining villages where it has been planted by the villagers to meet their needs and requirements of Dungi Bamboo (*Cephalostachium pergralite*) mainly occurs along nallah banks and in the moist pockets of Raipiri RF, Kunjar RF, Majurdima RF, Solguda RF.

The area under Bamboo and its quality has been deteriorated over time because of un-systematic and indiscriminate felling by local tenants (villagers) combined with fire hazard, grazing and untimely silvicultural operation has deteriorated the good quality crop conditions. Also present upgraded status of Bamboo clumps in the bamboo bearing forest is mostly due to rampant and reckless removal of Bamboo shoots (Kardi) and young green bamboo by local habitants for the consumption and trade purpose respectively. The reason for degradation and poor productivity of the area will be analyzed in details, if necessary plantation of Salia bamboo (*Dendrocalmus strictus*) will be prescribed in “C” type bamboo clump area.

General observation and enumeration results indicate poor availability of commercially exploitable bamboos in majority of forest blocks, However, as per enumeration results , growing stock of bamboo in the division has estimated and it come to 54703 sale units.

6.6.2. Silvicultural System: The silvicultural system adopted for working of bamboos will be Culms Selection-cum-Clump Improvement. This system will aim at removal of optimum number of matured culms from each available clump and to maintain the remaining culms in each worked out clump as evenly distributed as possible so as to create favourable condition for the growth of new culms and for the development of clump. .

6.6.3. Cutting Cycle: The cutting cycle of four years (A, B, C, D) as was done in the previous plan is prescribed.

6.6.4. Calculation of Yield: Yield will be regulated entirely by area. The coupes in each felling series are to be worked out by rotation and for that purpose each felling series is divided in to 4 Nos. of coupes. For calculating the yield the bamboo cutting rules communicated vide letter No.13/FCWP/OS-Gen dt.24.12.90 of the MoEF, Govt. of India shall be followed. As per the said rules, culms up to one year of age (Karadi) and the bamboo culms over one year but less than two years of age (Kasi) will not be cut under any circumstance. Such, more than one year old culms and the culms which are older

than two years but less than three years of age are also to be retained in the clump and their number shall not be less than number of Karadis. In addition, the minimum culms per clump to be retained after cutting shall not be less than 20 (twenty) culms for clump Quality-I, 15 (fifteen) culms for clump Quality-II and 10 (ten) culms for clump quality-III.

The Cutting series wise future annual outturn is expected to be variable as annual production of culms varies with the rainfall, past working, illicit removal of Kardi, flowering of clumps, incidence of fire and other factors. However, the estimated yield (target) for each annual coupe due for working need to be arrived at by the agency of working based on clump quality, treatment types and sample enumeration. The work in this respect should start by June-July and to be completed by August for the coupe due for working so that new Karadies are taken into account.

6.6.5. Sequence of Cutting Series: Bamboo Coupe will be opened for working from October to June. Each cutting series has been divided into 4 more or less equi-productive annual coupes as A.B.C. and D. These annual coupes have been shown on 1:50,000 scale toposheets. The areas allotted to different annual coupes are given in **Table No. 6.6.5.1**. To make the same sequence of annual cutting coupes in all Cutting Series, annual coupe name in some bamboo coupes have been changed in comparison to previous Working Plan keeping the area intact as proposed in Preliminary Working Plan Report. A definite sequence of cutting within bamboo coupes will also be followed. The coupe shall be divided into four sections running across the contours. The sections from the uphill side should be worked first and work in the first section shall be completed in all respect before the work commences in the second section and so on. This ensures better work output as coupes on higher ridges can be worked efficiently during winter and those on lower altitudes during early summer season. Further fire prevention & fire management can be done in a better manner. If the cutting operation could not be taken up in a particular year because of some factors; those coupes will be taken for cutting in the following year in addition to the area earmarked for the same year.

Table No. 6.6.5.1.-Sequence of Cutting Series					
Mahulpada Cutting Series					
Year	Coupe Number	Block	Compartment Numbers	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Lunga RF	3,5,7,9,10,11,&12	1528.709	4931.259
2022-23 2026-27 2030-31	B	Mahulpada RF	8(b), 9(b), & 10 (b)	930.498	
2023-24 2027-28	C	Mahulpada RF	4(b), 5(b), 6 (b) & 7	1479.748	
2024-25 2028-29	D	Mahulpada RF	1(b), 2(b), & 3 (b)	992.304	
Ulsura Cutting Series					
Year	Coupe Number	Block	Compartment Numbers	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Ulsura RF	1(b), 1(c), 3(b), 4(b), 6(b), 6(c), 7, 8(a) & 8(b)	977.954	4921.627
2022-23 2026-27 2030-31	B	UlsuraRF Budhapahada RF	5 1,2,3&4(b)	1473.703	
2023-24 2027-28	C	Sinduria RF	1(b), 2,3,4 & 5	1034.157	
2024-25 2028-29	D	Balia RF	1,2,3,& 4	1435.813	

Kantamunda Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Kantamunda RF Balai RF	5 & 8 1 & 2Part	1326.107	8567.399
2022-23 2026-27 2030-31	B	Kantamunda RF	7,9,10 & 11	2002.767	
2023-24 2027-28	C	Balai RF Balai PRF Mahuldihi PRF Part-I	2(bal),3,4,5,6,7(b), 8(b), & 9 Entire Entire	3033.189	
2024-25 2028-29	D	Kantamunda RF Kantamunda-I PRF (Part-I) Kantamunda-II PRF (Part-II)	1,2,3,4,& 6 Entire Entire	2205.336	
Kello Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Raipiri RF	1,2,3,4,5,6,9,10 & 11	3043.164	11995.068
2022-23 2026-27 2030-31	B	Raipiri RF	7,8,12,13,14,15 & 17	2824.527	
2023-24 2027-28	C	Raipiri RF Kello RF	16 & 18 1,2,3,4, & 5	2788.613	
2024-25 2028-29	D	Majurdima RF	1,2,3,4,5,6,7, & 8	3338.764	

Kunjar Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Jada RF	1,2,3,4,5, & 6	1714.500	8871.855
2022-23 2026-27 2030-31	B	Kunjar RF	4(b), 5,6,7,8,9 & 10	2657.763	
2023-24 2027-28	C	Kunjar RF	1,2(b), 3(b), 3(c), 11 & 12	1931.572	
2024-25 2028-29	D	Solguda RF Solguda PRF	1,2,3,4(b), 4(c), 5(a),5(b), 6(b), 7(b) & 8 Entire	2568.020	
Sirigida Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Sirigida RF	2(a) part, 3Part, 4,5part,6(a) part, 9part,10(a),10(b) part	989. 724	4465.702
2022-23 2026-27 2030-31	B	Sirigida RF Sirigida PRF	1,2(a) bal, 2(b), 3bal & 5bal Entire	887.309	
2023-24 2027-28	C	Sirigida RF	3bal,5bal 6(a) bal, 6(b), 7, 8part, 9part	1076.576	
2024-25 2028-29	D	Sirigida RF	2 (bal), 9(bal), 10(b) bal, 11,12,13 & 14	1512.093	

Dhenkiam Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Dhenkian RF	3(b)part, 4part,5(b) part, 6(b) part, 7(b), 8(b) part, 9part, 10,11part,12part, 16(b) part & 17(b) part	1652.844	5673.877
2022-23 2026-27 2030-31	B	Dhenkian RF	15part, 16(b) part, 17(b) bal, 18(b), 18(c), 19(a), 19(b) part, 20(b) & 21(b)	1288.866	
2023-24 2027-28	C	Dhenkian RF	8(b)bal, 9part, 11part,12bal,13,14,15ba l,16(b) bal, 17(b) bal	1518.448	
2024-25 2028-29	D	Dhenkian RF	1,2,3(b) bal, 4bal, 5(b) bal& 6(b) bal	1213.719	
Kusumdihi Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Kusumdihi RF Kusumdihi-IIIPRF	4part, 6part, 7, 8part, 10part, 15part, 16part, 17 Entire	1518.427	5570.512
2022-23 2026-27 2030-31	B	Kusumdihi RF	1,2,3,4bal,5 & 6bal	1715.478	
2023-24 2027-28	C	Kusumdihi RF	8bal,9(b), 10bal, 11(b)part, 12part, 14part, 15part	1159.772	
2024-25 2028-29	D	Kusumdihi RF	11(b)bal, 12bal, 13,14bal, 15bal,16bal	1176.835	

Rushimath Cutting Series					
Year	Coupe Number	Block	Compartment Number	Coupe Area (Ha)	Total area of the cutting series (in ha)
2021-22 2025-26 2029-30	A	Rushimath RF	6part,7(b)part,8(b)part, 9part,10,11(b), 12(b), 13,14,15 & 16part	2949.559	10085.206
2022-23 2026-27 2030-31	B	Rushimath RF Gurundia RF Gurundia PRF	16bal, 1,2,3,4part, 6part & 7part Entire	2196.633	
2023-24 2027-28	C	Gurundia RF	4bal,5,6 bal & 7bal	1480.569	
2024-25 2028-29	D	Rushimath RF	1,2,3,4,5,6bal,7(b)bal, 8(b)bal,9bal	3458.445	
	G.TOTAL:				65,082.505

6.6.6 Method of Execution of Cutting Operation: The coupe boundaries have been made to coincide with prominent natural features and in most of the cases, the coupe boundaries are co-terminus with compartment lines. Hence, in most of the places, the demarcation of coupe will not be difficult and it will consist of only freshening of white paint rings on the tree lying on the compartment lines. Where the coupe boundary is not co-terminus with the compartment line, then it is to be demarcated by giving two coaltar rings at breast height on the trees standing along the line. Each coupe should be divided into convenient number of sections to facilitate better working, supervision and control. Sign boards depicting the name of felling series and number of coupe shall be fixed at the corners of coupes and at conspicuous places where the coupe boundary intersects the road or foot path.

6.6.6.1. Demarcation of annual coupes: Bamboo coupes shall be demarcated by giving double coal-tar rings at the breast height of all the trees standing on the coupe lines, which are distinctly visible from each other. Similarly single coal tar ring will show the

section line. The signboard should be displayed in the Bamboo Coupe showing the name of the cutting series, the sequence of the coupe, its area, year of working and compartment number. The coupe boundaries are kept co-terminus with compartment lines so that the demarcation of coupes is not difficult.

6.6.6.2. Execution of BambooCutting:

Cutting of bamboo in a coupe should start from uphill side and continue gradually downwards so that no area is left unworked.

The State Government decides the agency for working of bamboo, as it is a nationalized forest produce. At present the Orissa Forest Development Corporation Ltd. is the agent of Government to work out bamboo coupes through the Raw Material Procurer (RMP) on their behalf. If OFDC surrenders some coupes on un-economic considerations, it will be worked departmentally, because, all the area will be treated as per prescription of Working Plan irrespective of availability of harvestable bamboo.

Paper industries have reduced their requirement of bamboo as the cost of bamboo working has gone up substantially and it becomes uneconomic as compared to the market price of bamboo. Due to this, the Paper mills have shifted to procure their raw materials from other softwood and pulpwood plantation such as Casuarina, Acacia, Chakunda etc. Therefore, alternative arrangements are required to be made for disposal of bamboo or the royalty of bamboo could be reduced so that the paper mills take interest in working of bamboo from the forests.

6.6.6.3. Treatment Maps

(i) Having completed the demarcation of bamboo coupes and before taking it up for working, a Treatment map will be prepared by the Agency for working on a copy of the management map in 1: 50,000 scale indicating Salia and Daba bamboo areas respectively.

(ii) Treatment types should be distinguished basing on the assessment of the standard Salia bamboo quality classes and actual clump condition. In both these cases, areas less than 4 ha in extent will not be separated out as distinct treatment types.

(iii) Treatment types of salia bamboos: The following Treatment types have been identified for salia bamboo areas. Salia bamboo forest will be categorized for different treatment as described below.

Treatment type 'A'

Area with healthy and well stocked bamboo clumps consisting of

Clump quality - I	Where culm height of bamboos is 9 meters and above
Clump quality - II	Where culm height of bamboo is between 6 to 9 meters
Clump quality - III	Where culm height of bamboos is below 6 meters

Treatment type 'B'

Areas with well stocked but degraded, damaged, congested and / or fire burnt clumps.

Treatment Type 'C'

Areas where in bamboo clumps are sparse and scattered. If necessary the treatment Type B & C may be further classified into the above three clump quality classes if good growth is there.

6.6.6.4. Cutting Rules For Salia Bamboos (*Dendrocalamusstrictus*)

Salia bamboo (*Dendrocalamusstrictus*) will be worked out as per the following prescriptions.

- (i) Karadi (culm up to one year of age) and the bamboo culm over one year but under two years of age will not be cut under any circumstances. The numbers of

culms which are older than 2 years but less than 3 years are to be retained in the clump and their number should not be less than number of Karadies. The minimum number of culms to be retained in a clump is fixed on the basis of quality of the clump and is as follows:-

Clump Quality - I	20 culms
Clump Quality - II	15 culms
Clump Quality - III	10 culms

(ii) Clumps having the minimum or less than the minimum prescribed number of culms shall not be commercially exploited. Only broken, dead, dry, badly damaged and malformed bamboos will be felled.

(iii) A clump will be distinguished as an independent clump where its periphery is easily discernible from others. Only where such a distinction is not possible, two clumps within one meter distance will be regarded as one.

(iv) While retaining culm against felling in a clump they should remain well spaced and preferable at the periphery and in the order of preference as follows:

- (a) Karadi bamboos.
- (b) Kasi bamboos (older than one year but less than 2 years).
- (c) Pakala bamboo (Young green bamboos).
- (d) Older live bamboos.
- (e) Others as may be available.

(v) Rhizomes will not be dug.

(vi) The height above which culms are cut shall not be less than 15 cm or more than 45 cm from the ground level and in no case below the first prominent node from the ground.

- (vii) The cut shall be made with sharp instrument to ensure that the stump remains intact without splitting.
- (viii) Lops and tops of bamboos will be simultaneously cleared to avoid fire hazard at least to a distance of one meter away from the periphery of the worked out clumps.
- (ix) Climbers shall be cut from all the bamboo clumps during working of the coupe.
- (x) Bamboo strips can be used in making bamboo bundles, if these are obtained from the waste and only when their removal helps reduce fire hazard, otherwise these will not be used for tying the bamboo bundles.
- (xi) As far as possible, bamboo felling should be completed by the end of May. Bamboo felling will not be done from 1st July to 30th September each year. However, all fellings and transport of bamboos in the sanctuaries shall be completed by the end of March positively.
- (xii) If sporadic flowering of bamboo culms is observed, such clumps will be clear felled once the seeds from such culms have fallen.
- (xiii) In case of gregarious flowering of bamboos, on the shedding of ripen seeds, the clumps will be clearfelled and extracted early, so that bamboos may not dry or deteriorate or become prone to fire hazard. Disposal of such bamboos should be expeditiously arranged to prevent deterioration in quality and the prescribed treatment as mentioned in **Para No.6.6.6.7.1** shall be adopted in the gregariously flowering areas.
- (xiv) Lopping of bamboo either for feeding livestock or otherwise is strictly prohibited.

- (xv) Bamboo forests should be rigidly protected from fire and it has to be ensured that, in any case, forest fire should not occur during the year of working and the year following it.

6.6.6.5 Rules applicable to specific treatment types:

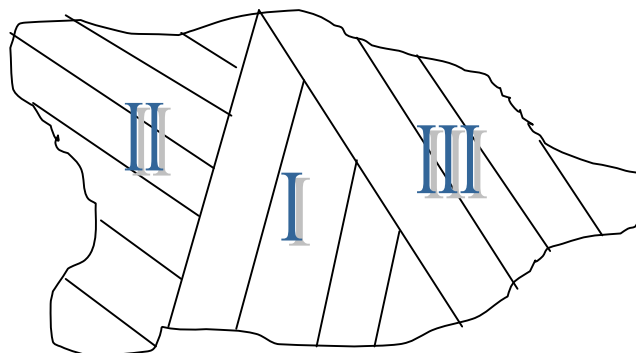
(a) Treatment type - A

1. Commercial felling will be done in those clumps, which have more than the prescribed minimum number of culms in each.
2. Cultural operations will be carried out in clumps having less than the prescribed minimum number of culms in each. In such clumps commercial fellings will not be done.

(b) Treatment type - B

1. There will be no commercial felling in any clump.
2. Only cultural operations shall be carried out which will include:
 - (i) Felling of all dead, dried, over matured, burnt, broken and grossly damaged bamboos.
 - (ii) Broken or cut bamboos or high stumps in green condition having length of 2.5 meters or more may be retained, if necessary, to maintain size of the clumps.
 - (iii) The minimum number of culms to be retained per clump as prescribed in foregoing paras for various quality classes may not be strictly followed. It is left to the DFO to decide the no of culms to be retained in a clump after field verification.
 - (iv) The congested bamboo clumps should be clear felled by forming segments. The maximum number of segment under which a congested clump should be worked out will be three and at each working not more than one segment will be worked out. Where three segments are formed, the middle segment will be in the shape of a triangle having apex at the periphery. Only this middle segment should be felled at the first working. In subsequent

cycles, side-segments should be felled. Diagram showing divisions of the clump in three segments is given below: -



(c) **Treatment type - C**

1. Only cultural operations shall be carried out in the existing bamboos clumps.
2. The bamboo potentiality of such forests will be augmented by raising bamboo plantation. The minimum area to be planted annually is left to the DFO to decide depending on the resources available.
3. Tending and cultural operations in the areas planted with bamboo will be done as per the standard practice.

6.6.6.6 :-Distinguishing Morphological Characters of TheCulms of Different Age

Culm age	Morphological character
Kardi (The first year culm)	Culm sheath present on lower half of culm. Branches present throughout the length of culm. Culms green uniformly, bloom is abundantly present and comes off easily on finger. A fresh cut just under the node shows the same fresh colouration even after one or two minutes.
Kasi (The 2nd year culm)	Culm sheath mostly absent except some reminisces. Culm dark in colour. Branches present particularly at all nodes. Bloom is patchy, greyish white in colour and comes off less easily on finger. A fresh cut just under the node shows the same fresh colouration even after one or two minutes.
Pakala (The 3rd & 4th year culm)	Culm sheath absent. White bloom absent. Blackish grey or dark blotches appear which come off on finger slightly on rubbing. A reddish brown colouration after one or two minutes.

6.6.6.7 Simultaneous Silvicultural Operations:

Since productivity of the bamboo forest depends on proper and timely silvicultural operations, it should be ensured to carry out such operations during / or immediately after the year of actual harvest. Even the early stage established natural regeneration shall also be taken care of at the time of silvicultural operations so as to add to the future crop of the bamboo forests. These operations shall preferably be done along with the main cutting and comprise of the following components.

- i. All cutting debris shall be removed and the clump shall be left cleaned.
- ii. If any clump has not been cleaned at the time of felling, such clumps shall also be attended to thorough pruning in addition to the climber cutting. If any high stumps have been left, those shall also be rectified
- iii. The exposed rhizomes shall be covered with soil scrapped from the uphill side on undulating terrain. Wherever required, necessary stone walls shall also be erected on the down hill side to support the soil so that the clump stabilizes. This shall be concentrated mainly in steep slope areas. However, during the process, care should be taken to ensure that no damage is done to the rhizomes and rootstock.
- iv. As a moisture conservation measure, half-moon trenching shall also be dug on the uphill side of the clump in concave shape.

6.6.6.7.1. Treatment of Gregariously Flowered Bamboo Clumps:

In areas as per the records of Bonai Division, the gregarious bamboo flowering had occurred in the bamboo coupe 'B' of Sirigida felling series during the year 1975-76. This gregariously flowered area covers the area of compartments 2 (a), 3, 4, 5, 6 (a), 9, 10 (a) & 10 (b) of Sirigida RF. In regards of occurrence of gregarious flowering in other bamboo bearing areas, no records is available in Bonai Division

Instances of flowering in poor sites is due to the effect of site quality, which is related to the growth and storage of starch, sugar and other substances in the clump, which help flowering. In a well managed forest, intensity of flowering is less in comparison to an unworked forest consisting congested clumps. Intensity of flowering

is more in area having more biotic interference in form of grazing and fire in comparison to protected area. However, in the event of such a situation the following prescription are made.

- (i) Bamboo seedlings at a spacement of about 4m x 4m are to be adopted and retained and the rest are to be thinned out.
- (ii) Clearing, soil working and weeding are to be done around the adopted bamboo seedlings up to a radius of 50 cm.
- (iii) To maintain continuity, planting of bamboo rhizomes is also to be resorted to especially in big gaps.
- (iv) All the flowered clumps are to be worked out as per the prescriptions of the Working Plan.
- (ii) The area should be closed for grazing.
- (iii) Elaborate fire protection measures are also to be taken.

It is important to identify the characters of flowering in salia bamboo to decide appropriate management technique.

	Sporadic flowering	Gregarious Flowering
1.	Scattered nature of flowering. Only few clumps are involved in flowering.	Flowering occurs almost in the entire area.
2.	Only a few culms flower in a clump.	It involves almost all or some proportion of clumps. Flowering takes place in all the culms in the clump.
3.	The culm may or may not die after flowering.	All the culms of a clump die after flowering.
4.	The clump does not die.	Flowering is followed by the death of the clump.

5.	It takes place usually irregularly almost every alternate year.	It follows a cycle of long interval of 20 to 65 years.
6.	It is confined to flowering areas.	It progresses in a definite direction like an epidemic wave.
7.	Flowering is completed within summer season.	It takes 2 to 4 years to complete the flowering in the area.

6.6.6.7.2. Threats to Bamboo Forest

The main identified threats with respect to the management of bamboo forests are:

- i. Indiscriminate cutting of bamboo by tenants and artisans;
- ii. Annual forest fire;
- iii. Excessive grazing and
- iv. Clear felling of daba bamboo.

These factors are required to be checked on one hand and techniques are to be developed to improve the quality and quantity of the clumps on other hand to avoid deterioration of bamboo forests. Decreasing trend in production of bamboo has already indicated the deterioration of bamboo forest. Appropriate silvicultural techniques to manage the bamboo forest will, therefore, be essential in restoring the valuable bamboo forest of the Division.

6.6.6.8 Regeneration: In the areas of sporadic flowering and gregarious flowering profuse regenerations come up after rainy season. Care should be taken to prevent the bamboo regenerations from grazing and fire. Further, bamboo seedlings and rhizomes are to be planted in Treatment C type areas of Bamboo forests.

6.6.9. Control, Associated Regulations and Measures

Necessary entries with regard to works undertaken in bamboo coupes must be entered in the compartment histories.

- i) Even if commercially viable bamboos are not available, SSO (Simultaneous Silvicultural Operations) should be taken up in the whole of degraded areas.
- ii) The RMP is to work the entire coupe area delivered to them. The left out (unworked) area should be taken up departmentally.
- iii) Frequent training programmes need to be conducted for enhancing capacity building of the bamboo artisans and bamboo harvesters and Departmental cutting edge personnel.
- iv) All clumps in worked out coupes shall be mounded with soil to induce regeneration growth of culms. Stone packing shall be done in the downhill of the clump to conserve water. This shall be done in the year following the coupe working.
- v) The regeneration coupe shall be protected from grazing.
- vi) Complete fire protection is recommended for the coupes already worked out.

In the matter of grazing and fire protection the areas of this working circle will be governed by the prescriptions of SelectionWorking Circle with which it overlaps.

CHAPTER –7

NTFP (OVERLAPPING) WORKING CIRCLE

7.1. NTFP (Overlapping) Working Circle: This Working Circle has prescribed for sustainable management of Non-Timber Forest Produce in the Division. This working circle overlaps with entire working plan area.

7.2. General Constitution of Working Circle:

The Working Circle has been constituted over the entire Working plan area. Forests of Bonai Division are rich in biodiversity. Species yielding non-timber forest produce (NTFP) like fruits, seeds, flowers, tubers, barks, leaves, roots and gums are abundant. The livelihood support of people in and around the forests largely depends on these products. Management of NTFPs was haphazard in the past and their collection was largely unorganized. Moreover, the present practice of collection of NTFPs is not scientific and sustainable. This Working Circle is constituted with an aim to address the problems with regard to scientific management of NTFPs and the problems involving means of livelihood of the rural poor and tribals of the locality.

The gatherers of NTFP, majority of them are women, have limited access to the market, and their primary concern is getting a fair price for the materials gathered by them and disposing them off. The prevailing system does not adequately provide these facilities to the primary gatherers. Keeping in view of the above said consideration, the Government of Odisha formulated the Policy on procurement and trade of Non-Timber Forest Produce during March 2000. In the present scenario, special efforts are required to strike a balance between protection of interest of the primary gatherers; enhancing their subsistence along with protection/conservation of the natural resources and increasing the productivity and making the forests' products sustainable. This Working Circle overlaps the entire Working Plan area, i.e. 1,37,282.602 ha.

7.3. General Characteristics of Vegetation: Since this Working Circle overlaps the entire forest area of the division, the characteristics of vegetation is same as that described in Chapter -2 and all other working circles.

7.4. Collection Series: Most of the the NTFPs are harvested annually and area spread over through out the forests of Bonai Division. Hence, no collection series has been formed. Annually NTFPs are to be collected from the total area of the forests without damaging the species.

7.5. Blocks and Compartment: Since this is an Overlapping Working Circle, this Working Circles covers all the 45 RFs, 41 PRFs, 25 DPFs, 29 PFs, and 32 VFs of Bonai Forest Division.

7.6. Special Objectives of Management

The Special objectives of management are as follows:

- i. To regulate the collection and extraction of various NTFPs with a view to harvest on sustainable basis.
- ii. To encourage regeneration of NTFP species within forests.
- iii. To improve the quality of NTFPs species within forests.
- iv. To protect the interests of the primary gatherers and promote their livelihood option.
- v. To optimize collection and extraction of various NTFPs
- vi. To enhance the value of forests by way of developing NTFPs in the forest, creating opportunities for value-addition of NTFPs, and strengthening marketing and other local institutions.
- vii. To enhance the stakes of local people in NTFPs and to extend skills to local people for sustainable collection, extraction and utilization of various NTFPs.
- viii. To encourage greater financial and managerial inputs in forests to promote regeneration of valuable and desirable NTFPs and to enhance productivity of forests.

- ix. To involve VSS members in NTFP collection, value addition, disposal and marketing.
- x. To study the availability of potential NTFP items including medicinal plants.

7.6.1. Analysis and Valuation of the Crop:

No systematic study was undertaken in the Division to assess the Volume/potentiality, flow and varied uses of NTFPs by the forest communities. There is need to ascertain the impact of collection / extraction / utilization practices on sustainability of these forests vis-à-vis the role of NTFPs in the village economy. The need for such studies has been long felt. The entire forests of Bonai Division have been surveyed by random stratified sampling method taking sample point of 0.1 ha in different strata of forest. Enumeration of trees, shrubs, herbs and regeneration have been taken up in the sample plots. Sample plot enumeration data have been transmitted to NRSC online. NRSC has compiled the enumeration data and submitted the enumeration results. NRSC has not assessed the no. of the NTFP species nor provided the total stand structure of NTFP yielding species. The National Working Plan Code, 2014 has emphasized that for Forest Resource Inventory, sample point enumeration need to be done in grid based systematic sampling methodology in place of random stratified sampling method .To get the better enumeration result ,grids should have been laid by dividing the Survey of India Topo Sheet in grid of 25"x25" longitude and latitude and sample points should have been located on centre of each grid.Further the no. of NTFP species and no. of each NTFP species.

Many collection practices very adversely affect forests and are often unsustainable. For example, if all seeds are collected from forest floor and no seed is left for regeneration, forests may not regenerate. This is evident in many Sal forests, where Sal seeds are being collected intensively. Similarly, no young Mohua trees are observed in many areas because there is no scope for regeneration due to massive collection of seeds and flowers.

Forest floors are often burnt before many oil seeds and grasses, particularly fodder grasses, are collected or used. This practice is very harmful to forests. It kills micro-flora and fauna. In many forests, floors are swept for leaf litter and humus. This practice affects nutrient recycling which plays an important role in maintaining transpiration process. Moreover, NTFPs are over exploited in many cases. Likewise, some medicinal species have been over exploited. They have either become extinct or are facing extinction. Similarly, plants whose tubers and roots are collected or used are under greater threat. The MFP items are being worked through Gram Panchayats.

The term Non-Timber Forest Produce (NTFP) includes all forest produce except timber, small timbers and fuel wood. NTFPs have great potential to support the people's economic development consistent with the principles of sustainable forest management. Bonai Forest Division having extensive jurisdiction and vast vegetative cover has good potential of NTFP. Tribes, who constitute major part of population along with other rural people, are dependent on such forest produce for their sustenance. Some of the NTFP items supplement their food and other consumable requirements while the collection, transportation and marketing of other NTFP items provides regenerative work to them especially during lean period.

The National Forest Policy 1988 has spelt out one of its strategies of rural development by associating the tribals and other rural people living in and around forest areas for protection, regeneration and development of forests by ensuring optimum collection of NTFP through them. Institutional arrangement for marketing the same will also be done to safeguard their customary rights and interests and to provide them employment. About 40% of livelihood of rural people including tribals is covered through collection and sale of various NTFP items. These items also contribute some amount of revenue to the state exchequer. Many NTFP items have commercial importance. NTFPs were neglected in the past and their collection was largely disorganised. Moreover, the present practice of collection of NTFP is not scientific and sustainable. In the light of above mentioned facts and with a view to provide avenues of economic development to rural and tribal people by generating employment the constitution of this working circle has been felt essential.

The collection of NTFP items is not only confined to RF blocks but also spread to DPFs, Khesra Forest, Village Forest, Govt. Waste land and private lands. Sal is the dominant species in majority of forests of this division and forms pure crop in many forest blocks. Sal seeds, Sal leaves and Sal resin (Jhuna) are important NTFP items procured from Sal forests of this Division and these items are available in substantial quantities. The primary and secondary associates of Sal along with under wood and under growth provide other important NTFP items like Char seeds, Kusum seeds, Myrobalans, Mahua flowers and seeds, Karanja seeds, Babul seeds, Siali leaves and fibres, Dhatuki flowers, Bhuineem, Ban haldi, Bankulthi, Kantabadhuni, Phulbadhuni, Bantulshi, Gums and Resins, etc. Some of these items are getting exploited for commercial purposes.

Kendu leaf is another important NTFP item being collected at commercial level in this Division. Kendu leaf bushes and shrubs are mostly available in Govt. waste land and private holdings and contribute about 75% of Kendu leaf production. The Mohua trees which yield Mohua flowers and seeds are largely available in the village forests and private holdings and contribute more than 55 percent of Mohua flowers and seeds collection. Mohua trees are also available in many RF and DPFs.

7.6.2. Silvicultural System: No Silvicultural System is prescribed except the collection of NTFPs on sustainable basis without hampering the future yield and regenerating the NTFPs & MFPs species.

7.6.3. Collection Cycle: Since NTFPs are being collected annually and the collection area covers all the forest Blocks of the Division, no collection cycle is prescribed.

7.6.4. Calculation of Yield: The Divisional Forest Officer should assess the yield in consultation with the field staff, primary collectors and traders. In the previous plan no attempt has been made to calculate the yield of NTFPs. No formulas of calculation of yield have been developed. NTFP survey was carried out in all ranges of this Division

during 2011-12 and 2012-13 under 13th F.C. Grant and the result of out-turn of NTFP both tree and shrub species based on its value are furnished below.

Table 7.6.4: Yield of NTFP in Bonai Forest Division as per the survey conducted during 2011-13							
Range	Category of NTFP	Total collection found from sample survey.			Total value in Lakhs.		
		Consumption in Q tls.	Sale in Qtls.	Total quantity in Qtls.	Value based on consumption.	Value as per sale.	Total value.
1	2	3	4	5	6	7	8
Bonai	Tree based	572.200	3,180.530	3,752.730	7.780	55.869	63.649
Kuliposh	- do -	3,676.895	4,435.300	8,112.195	71.630	78.941	150.571
Barsuan	- do -	1,231.000	3,837.000	5,068.000	17.640	97.098	114.738
Koira	- do -	190.000	453.000	643.000	2.087	5.190	7.277
Tamra	- do -	154.200	676.485	830.685	2.980	11.510	14.490
Jarda	- do -	1,124.420	6,431.564	7,555.984	19.902	113.830	133.732
Sole	- do -	442.000	2,459.500	2,901.500	6.033	41.595	47.628
Total:-		7,390.715	21,473.379	28,864.094	128.052	404.033	532.085
Bonai	Shrub based	5.50	30.70	36.20	0.101	0.588	0.689
Kuliposh	- do -	988.70	431.60	1,420.30	4.943	2.158	7.101
Barsuan	- do -	-	5,000.00	5,000.000	-	5.110	5.110
Koira	- do -	47.00	100.00	147.00	0.630	1.250	1.880
Tamra	- do -	28.08	37.62	65.70	0.480	0.626	1.106
Jarda	- do -	77.01	141.75	218.76	0.962	1.770	2.732
Sole	- do -	0.25	0.25	0.50	0.007	0.008	0.015
Total:-		1,146.540	5,741.920	6,888.460	7.123	11.510	18.633
Source: Office of Divisional Forest Officer, Bonai Forest Division.							

7.6.5. Method of Collection

For those items of NTFPs which shall be auctioned, it can be done so, as per policy of the State Government issued time to time but state owned Corporations and Co-operatives like OFDC, TDCC, LAMP etc. will be given preference over others.

NTFP items shall be collected from the trees without causing any injury to them. In case of collection of roots like that of *Rauwolfia serpentina*, the entire plant should not be uprooted. Only a portion of root may be removed.

Primary collectors should be properly guided and trained to collect NTFPs in a non-destructive way. Latest techniques of collection, drying and storage should be imparted to them. Value addition to collected NTFPs will increase their earning. Village micro enterprises based on NTFP should be encouraged. Thus, intensive training and awareness workshops coupled with exposure visit to other Divisions where it has succeeded are essential to educate the primary collectors, middle men and traders.

The main NTFPs of the Division are Sal seed, Kendu leaves and Mohua flowers. Besides these, other NTFPs are Sal leaves, Siali leaves, Siali fibres, Lodh and Medha barks.

The method and agencies of harvesting of some of the important NTFP items are furnished below.

Table: 7.6.5. Agencies of harvesting NTFP items	
(i) Kendu Leaf:-	The K.L. trade is regulated under the provisions of The Odisha KL (Control of Trade) Act'1961 and under operation by K.L. wing of Odisha Forest Department.
(ii) Sal Seed:-	It is a specified forest produce vide Notification No.34308/FFAH dt.9.12.82 and is regulated under The Odisha Forest Produce (Control of Trade) Act'1981. The OFDC Ltd. was appointed as Agent for collection and trade of Sal seed up to 2005 crop.
(iii) Tasar cocoons:-	Lease settled with M/s. ST & SCS Ltd, BBSR a Govt. of Odisha undertaking.
(iv) Sialifibre:-	Lease settled with Rourkela (KL) Division.
(v) Siali leaves:-	Settled with Sri P.K. Agarwal, Bisra along with TDCC Ltd for 3 years from 1996-97 to 1998-99 vide F&E Department No.21794/FFAH dt.25.9.96. Again, the lease settled with Sri Amit Kumar Singh, Bisra for 3 years from 1999-2000 to 2001-02.
(vi) Mohua seed and Char seed:-	Settled with Sri SawarmalGododia, Rajgangpur for 3 years from 1999-2000 to 2001-02.
(vii) Lodh and Medha bark:-	Settled with Sri SawarmalGododia, Rajgangpur for 3 years from 1999-2000 to 2001-02.
Source: Officer of Divisional Forest Officer, Bonai Forest Division	

Apart from this, lease of 32 MFP items in this Division were settled with M/s- Utkal Forest Products Ltd, Sambalpur vide G.O. No.28403/FFAH dt.6.12.89 for 10 years from 1989-90 to 1998-99. Subsequently, the order was cancelled vide No.10046/FFAH dt.5.5.90 and 29 MFP items out of 32 items were settled with the above said company for 10 years from 1990-91 to 1999-2000 vide No.23632/FFAH dt.26.9.90. Out of this collection of 10 MFP items were surrendered by the company during 1995 and 18 items were worked out by the company.

The lease of Lac, Tamarind, Myrobalans and Kantabadhuni were settled with TDCC Ltd during 1997-98. During 1998-99 other items viz. Gum, Honey, Hill broom, Baidanka, Jute seed, Nageswar, Baghnakhi, Ananta seed, Marda seed, Polanga seed, Kamalagundi, Lodobaguli, Katkal and Makhna seed were settled with TDCC Ltd. But during 1999-2000, TDCC Ltd. had surrendered these extra items and worked only on Lac, Tamarind, Myrobalans and Siali leaves in this Division.

However, as per Govt. Policy, in total, 60 items were treated as MFP items instead of NTFP items and their collection and disposal was transferred to Gram Panchayats with effect from 31.3.2000. Subsequently, another 9 items were also transferred to the control of G.P. during 2000 and 2006 as detailed below.

No.5503/FFAH dt.31.3.2000	-	60 items
No.13285/FFAH dt.23.8.2000	-	7 items
No.15325/FFAH dt.21.9.2000	-	1 item (Baibirang seed)
<u>No.3695/FFAH dt.2.3.2006</u>	<u>-</u>	<u>1 item (Sal seed)</u>
<u>Total</u>		<u>69 items</u>

NTFP items like Gum, Sal resin, Sal leaves, Khaira and Catechu, barks of trees (Sunari, Iodh, Medha, Phenphena, Arjunetc), roots of Patalagaruda, Tassar cocoons, Sandal wood and Canes are now under the control of Forest Department.

7.6.5.1 Sal Seed and leaves

Sal seeds are raked from the forest floor along with litter and humus. During the process of raking, all previous year seedlings are either killed or their root systems damaged. The removal of litter and humus exposes the soil and dries up the moisture which in turn kills the micro flora and fauna. Sal growth which is dependent on mycorrhiza is adversely affected. It is therefore necessary that limited area of Sal forest should be worked out at a time. Further, some quantity of the seeds should be left on the forest floor to facilitate natural regeneration. No collection shall be allowed beyond 15th June so that all the seeds fall during monsoon are allowed to remain on forest floor germinate naturally and helps regeneration.

Another point that needs consideration is the proper drying of the seeds after collection. If moisture content is not regulated, it becomes susceptible to fungal infection. Though it can be checked through application of fungicides, care should be taken to ensure timely purchase of seeds by the trader so that primary collectors do not suffer loss due to such damage. It is generally observed that the middlemen cheat the primary collectors at the time of purchase in the name of “sukti” *i.e.* loss of weight due to dehydration after purchase. They even deliberately delay in purchasing the Sal seeds in the local weekly hats in the evening with a view to cheat in weight & measures and exploit the illiterate tribals. Therefore mobile purchase units should be in place and purchase of Sal seed and other NTFPs are made from the door step of the primary collectors.

The staff of the Division as well as purchaser should work in close cooperation with the primary collectors in the interest of forest and all stakeholders.

Though the use of Sal leaves for making cup and plates is an age old practice in tribal areas, it has now become a commercial activity with the introduction of mechanical press and moulding machines. The leaves are even used for making pika

(bidi like country cigarette) though not for commercial purpose. It is also used as wrapper for food, betel etc.

The fresh leaves appear in March after defoliation. The tree coppices well particularly near the ground level, the advantage of which is taken by the leaf puckers. Better quality leaves are available to them at a convenient height from these coppice shoots. However, collection of tender leaves from such coppice shoots has harmful effects on the growth of plants. Hence, collection should not be allowed during March to May and even in the rainy season.

7.6.5.2 Myrobalans:

The fruits of *Terminalia chebula*, *T.bellerica* and *Embllica officinalis* (collectively known as myrobalans) are used for tanning and also for medicinal purposes. The best time for collection is March. Myrobalan tan is usually blended with other quickly penetrating tans to produce good leather colour. As observed, anla (*Embllicaofficinalis*) is generally harvested using un-sustainable techniques such as lopping and hacking of branches and at times even felling of trees. The competition for early fruit collection among the locals has resulted in plucking of unripe fruits and over exploitation. This has adversely affected the natural regeneration. Hence, premature harvesting should be discouraged. The best time for collection of Anla is the month of Chaitra (March-April) when it is ripe and mature. Fruits should be carefully plucked *using long poles with a hook* or by shaking the plant. Collection should be done in the morning hours because increasing heat may turn the fruits black, thus damaging the quality. After collection they should be stored under shade till the processing work begins. The main problem observed is that the collection techniques are quite harmful to the forest, the collectors are in a hurry to collect more quantity with less effort and they tend to break the bigger branches or even fell the whole tree for few fruits. Sometimes they collect immature fruits fearing that other collectors will collect the same before them. These practices should be avoided at any cost. The processing of anla begins within two days of its collection. Immature and blackened fruits should be separated and the selected ones are to be boiled for 8-10 minutes. The boiled fruits are

deseeded in a neat and clean place, after which they are sun dried on bamboo mats. The sun drying makes anla little reddish, and this fetches a better price in the market. The processed anla should be stored in gunny bags in dry places under normal room temperature. The time of maturity of fruits should be notified. In the absence of standards for sustainable harvesting régime, at least one third of the fruits should be left on the trees for natural regeneration to take place.

Generally, the primary collectors dry these fruits using simple sun drying techniques, which blackens the produce thus fetching lower price. However, drying and packaging the produce in small bags can help value addition. Pulverizing and selling anla powder either individually or collectively as triphala mixture can add value to the produce and fetch better price.

7.6.5.3 Char seed

Char seed, also called chiranjeedana or char dana is a fruit of *Buchanania lanzan*, which grows up to 18 meters in height and generally found in the forest of the Division. It is a close associate of Sal and Mahul. Although various parts of this tree are differently used, it is identified by its delicious fruit which is often regarded as poor man's grapes. However, Char seeds/ Kernel has variety of uses. It is either eaten directly or used in flavoring sweet meat, confectionary, betel nut powder etc.

The tree flowers during January – February and the fruit ripens in the summer. Though ripen fruits fall on the ground, the primary collectors often themselves pluck the fruits including the immature ones for further processing. However, mature fruits fetch better return (the seed is mature if it sinks in the water).

The un-decorticated seeds give better price if they are washed properly before selling. The kernel is vulnerable to insect attack, more particularly when left unprotected from moisture. Hence, in addition to drying them under the sun, care is also to be taken for their proper storage/bagging.

All the above mentioned issues shall be explained and demonstrated in detail to the primary collectors through training so as to facilitate better remuneration to them for their labour.

7.6.5.4 Siali leaves and fibre: These are obtained from Siali or '*Bauhinia vahlii*' which is wood climber of gigantic size and is otherwise looked upon as undesirable in view of the damage caused to the host plant. The natural climber is said to be capable of exerting so much pressure on the tree that the latter sometimes collapses under its weight. The climber thrives well in loose rocky soil particularly in the hilly areas and ravines. However, being strong light demander, it is less available in dense forests.

7.6.5.4 Leaves

Large leaves of siali are shaped like camel foot and appear as twins. They are largely used in making plates, donas and food wrapper. Siali leaves have high market potential throughout India. The quality of leaves varies according to their size and harvesting methods.

Leaves are better available between October. & February both in terms of quality and quantity. This is the peak period of collection. The collectors often tend to lose their patience in plucking the leaves and cut down the climbers to get the whole resource at their disposal.

If the leaf is plucked leaving its petiole or stalk on the climber itself, then the drying is better facilitated and wastage is also reduced since the stalk has no use in making of leaf cups and plates. To ensure proper collection in different areas of the division, the field staff should intensify their supervision during the collection season.

Siali leaves are the major source of income for the tribal community members. Most tribal families are getting engaged in collection of leaves. They dry the collected leaves under sun for about two to three days and then stitch five to six leaves into a plate with the help of thin bamboo straws and then sell them in bundles.

There is a scope to raise the remuneration of the primary collectors if they could be organized into cooperatives including SHGs and provided with processing

machines to get the benefit of value addition. The skills of the poor collectors may also be upgraded through regular trainings.

7.6.5.5 Fibre

Fibres obtained from the climbers are used for making ropes for domestic purpose. However one major use is in the field of Kendu Leaf processing, for the purpose of binding. For extraction of the fibre, climbers shall have at least two feet girth. This is the girth when the climber moves towards its maturity and requires to be cut for silvicultural needs. Even the quality of leaves also gets reduced.

The climber has to be cut flush to the ground and carefully pulled out from the host plant. Usually, it takes four to five years for the climber to attain the exploitation size. The process of separating the fibre from the wood plant tissue is technically known as 'Retting'. This process consists of allowing the stem to the action of water and hence fermentation to take place resulting in removal of gummy material by water and subsequent beating & scrapping of the softened tissue to get the fibre.

7.6.5.6 Hill Broom

Hill brooms are prepared out of grass, '*Thysanolenia maxima*', otherwise known as bouquet-grass or tiger grass. It's a tall perennial grass, usually found on forest slopes, particularly near water streams as it thrives well in soils having high moisture content. The grass can grow as tall as four feet and may attain up to 48 cm long inflorescence which constitutes the major portion of the hill broom.

The collection time is from March to June but harvesting done before complete maturity gives better quality and price for the broom as greener the inflorescence, better is the durability and value. Hence, harvesting shall be done just before the full maturity. However, care shall be taken to ensure natural regeneration i.e. some mature grass should be left as such for seeding and natural propagation.

Hill brooms need very simple processing. The broom after cutting are dried in sun for two to three days and separated into equal length. The brooms of different sizes are tied in an orderly manner with the rope or plastic at the lower end. All these operations are done manually. The rate of bound hill brooms even in the local market is much more than the loose brooms. On an average one kilogram of hill brooms may be processed into three hill brooms.

With proper training, the primary collectors can be made good broom makers and taught attractive patterns of tying on the broom thus facilitating further value addition. Hence, there is considerable scope for value addition at local level and to raise the income level of poor collectors.

As stated above, proper training plays a crucial role in its value addition. The way grass is cut affects the price. The unwarranted long stalk increases the waste and hence reduces its price. The skill of the primary collectors may be further upgraded through training, demonstrations and extension methods.

7.6.5.7 Tamarind

Tamarindus indica is a big tree and exists abundantly in natural forests besides being grown on private lands. It can attain a height of up to 24m & is even planted in avenues. It thrives well in a warm climate and can withstand drought. Its fruit is a long pod with 6 to 10 cm seeds & contains about 88% of its weight as pulp. Tamarind fruits generally become available for collection during March-April. On an average, a full grown tree can yield annually around 200 kgs fruits.

Tamarind is used mainly as preservative and an important ingredient in pickles, juices and tamarind concentrates. Tribals even consume the seeds as food after boiling them. Seeds boiled with mahua flowers are considered delicacy. It is used in powdered form commercially known as TKP (Tamarind Kernel Powder) which is becoming increasingly popular in textile & paper industries as a sizing material in view of environmental cost being linked to such units. Its seed is also used as cattle feed and

poultry feed. Tamarind, thus, has many uses and is in great demand in different markets.

It needs very simple processing. After collection, thin hard cover is decorticated manually which is sold at much higher price than the seeded one. Even the seeds are also sold at good prices. Moreover, the deseeded tamarind is less prone to insect attack & thus, can be stored for longer periods. Hence the simple process of deseeding at the primary collector's level shall be encouraged.

7.6.5.8 Mahua flower and Seed

- i) Mohua flower is available during April – May. Since sugar content is maximum when flowers are mature and ready to fall, the primary collectors should wait for the flowers to fall. However, ground floor should be cleared before hand so as to get unadulterated flowers.
- ii) The ideal time for collection is the early morning when maximum flower dropping occurs. The value addition identified for Mohua are grading of flowers as well as drying. Proper drying should be ensured to increase its gestation period of use. Otherwise, degradation in quality causes lowering of its price. The dried flowers having reddish colour has more market value than blackish colored flower.

7.6.6. Calender of Collection of NTFPs

The calendar of collection of few NTFPs are provided in **Table No. 7.6.6**

Table 7.6.6-Calender of Collection of NTFPs					
SI No.	NTFP	Collection time	SI No.	NTFP	Collection time
1	Kendu Leaves	February - June	24	Semul cotton	March - May
2	Sal seeds	May - June	25	Honey & Wax	January
3	Siali leaf	October - May	26	Thatch grass	January - March
4	Sialifibre	October - May	27	Khajuripatra	October - March
5	Amla	October - April	28	Sabai grass	October - April
6	Harida	November - February	29	Sunari fruit	September - April
7	Bahada	January - April	30	Tentuli	Dec. – Feb.
8	Cashew nut	April - May	31	NeemSed	June - July
9	Char seed	April - May	32	Genduli gum	October - May
10	Mango	May - June	33	Kurei fruit	Dec. – Feb.
11	Bel	May - June	34	Hill broom	March - June
12	Marking nut	December - March	35	Khaira	October - May
13	Lac (Maghsiri)	January - February	36	Sal resin	January - April
14	Lac (Jestha)	June - July	37	Broom grass	October - May
15	Gum	October - March	38	Sisal fibre	October - May
16	Mahua Flower	April - May	39	Lemon grass	March - April
17	Mahua seed	May - June	40	Kamal gundi	February - March
18	Kusum seed	July - August	41	Ban tulsi	Nov. - March
19	Karanja seed	December - January	42	Lodha Bark	October - May
20	Kochila seed	December - January	43	Dantari Bark	October - May
21	Kendu fruits	April - May	44	Phenaphena	October - May
22	Dhatki flower	January - April	45	Mango kernel	June - July
23	Arrow root	December - January			

7.6.7. Regeneration: Afforestation over 30,162.864 ha. have been taken up in this division during the period from 1997-98 to 2015-16 wherein NTFP species like Asan, Arjun, Harida, Bahada, Anla, Neem, Mango, Karanj, Mahul, Tamarind etc. have been planted in these areas. It is expected that there will be increase in production of NTFP items in future. Further during the plan period, NTFPs species and MAPs species will be planted in the forest in different Working Circles. Through proper protection measures, forest quality need to be improved to facilitate proper regeneration of NTFP species also.

7.6.8. Associated Regulations and Measures

7.6.8.1 Protection From Fire: All the forest blocks should be protected from fire. Unfortunately, the local people set fire in forests for collection of NTFPs like Sal seed, Mohua flower etc for which the entire forest is affected by severe fire. Hence, such practice should be completely stopped and the local people must be motivated to sweep the forest floor for collection of NTFPs.

7.6.8.2 Protection From Grazing: All the forest blocks should be protected from grazing. Due to heavy grazing the regeneration of NTFPs species and MAPs species are browsed and damaged by the cattle. Grazing should be regulated in such a manner that regeneration of forest is not affected.

7.6.8.3 Cutting and Lopping of Trees: The local people some times cut the NTFP plants to collect the fruits and leaves easily for which the NTFPs species are being depleted. They also lop the trees to collect the NTFPs for which the growth of NTFPs species are severely affected. Such practices are to be completely stopped and action should be taken against them.

7.6.8.4 Marketing of NTFPs : Most of the NTFPs are not collected because of lack of marketing facilities. The marketing aspects of various NTFPs need to be researched. The Divisional Forest Officer shall contact the State Cooperatives like TDCC, ITDC and other organizations for marketing of NTFPs available in the Division. The V.S.S.

and Gram Panchayats should be given information about the marketing prospects of various NTFPs. The divisional staff should play the role of facilitators in the marketing of NTFPs by acting as link between the consumers and the primary suppliers. Minimum support price for different NTFPs are to be announced by Govt. and all kinds of different sale by primary collectors to be avoided. Govt. may consider declaring bad crop year of NTFP like sal seed, Mahua seed etc. as natural calamity and adequate compensation paid to the collectors by enhancing the procurement price at higher rate.

7.6.8.5 Fair prices of NTFPs

The district administration has to shoulder all responsibility to ensure that price fixation for procurement of NTFPs are done every year in time and regular return on NTFP collection are submitted by the traders and procurers to the Range Officers. The method of collection of several NTFPs being adopted is not scientific and sustainable. Awareness among public should be created in regard to scientific collection of NTFPs by demonstration. The V.S.S. should be involved in dissemination of this information.

The divisional staff should prevent the purchase of the NTFPs at lower price by middlemen. Every year Government of Orissa fixes the procurement price of the various NTFPs. This price should be widely circulated among the Gram Panchayats, V.S.S. and FPCs and for publicity it should be given in both print & electronic media.

The awareness among the public regarding the value of NTFPs should be emphasized by regular meeting and use of audio visual aids.

7.6.8.6 Control: Collection of NTFPs should not be allowed beyond the carrying capacity and regeneration potential of the forests.

7.6.8.7 Rights and Concessions: Rights and concessions of local people shall be regulated in accordance with the provisions of relevant acts and rules in force.

CHAPTER -8

JOINT FOREST MANAGEMENT (JFM) (OVERLAPPING) WORKING CIRCLE

8.1 Joint Forest Management (JFM) (Overlapping) Working Circle: This (Overlapping) Working Circle has been prescribed to execute joint forest management activities with the aim of protection forests from human dependence on one hand and to improve socio economic status of the forest dependent community on the other hand as envisaged in National Forest Policy, 1988.

8.2 General Constitution of Working Circle: The JFM (overlapping) Working Circle is being constituted in this Plan for the first time. As on 31.3.2020, there are 299 Nos. of VSS / JFMCs formed in the jurisdiction of Bonai Forest Division, as per Joint Forest Management resolutions issued by Govt. of Odisha. The area allotted to these VSSs comes to 13,649.518 ha. and there is 166.790 ha. of Village Forest areas, and hence a total of **14135.968 ha.** have included in JFM working circle, and details of these areas are as depicted in **Table No.8.2.1.**

Table No.8.2.1.- Forest Area Allotted to JFM (OL) Working Circle.				
Sl No.	Name of the Forest Block	Area in ha. as per Govt. Notification	Area in ha. computed in previous Plan	Area in ha. included under JFM (OL) WC
1	2	3	4	5
1	Amrudhi RF	2440.416	2408.620	506.000
2	Kundheibira RF	214.488	260.437	60.000
3	Budhapahar RF	1041.278	1071.750	211.000
4	Dandapat East RF	416.997	409.500	102.000
5	Dandapat West RF	2338.972	2294.063	377.000
6	Lunga RF	5284.176	5242.146	1124.300
7	Mahulpada RF	4734.925	4565.000	336.000
8	Mendhamaruni RF	546.337	512.937	25.000

9	Sinduria RF	1144.880	1144.881	130.000
10	Ulsura RF	1420.477	1400.061	127.000
11	Rakshi-II RF	1745.884	1796.289	113.000
12	Kello B-RF	207.203	207.204	140.000
13	Toda RF	15722.869	15703.988	440.400
14	Karo RF	1350.708	1419.063	184.000
15	Balai RF	3466.693	3416.313	602.000
16	Balia RF	1499.797	1435.813	49.000
17	Kantamunda RF	4410.764	4349.688	463.000
18	Kello-A RF	1872.521	2041.978	333.000
19	Kunjar RF	4946.985	4924.687	110.000
20	Raipiri RF	6617.563	6614.326	370.000
21	Solguda RF	2730.068	2730.068	10.000
22	Dhenkiam RF	6553.233	6398.358	829.000
23	Gurundia RF	2531.606	2514.282	367.600
24	Kusumdihi RF	5445.973	5277.124	474.000
25	Rusimath RF	6741.533	6712.567	1092.000
26	Dharanidharpali RF	178.065	178.066	156.000
27	Gogua RF	131.121	131.121	118.980
28	Hulku RF	30.756	30.757	30.750
29	Baliatotai RF	46.944	46.945	46.940
30	Bonarai RF	66.774	66.775	66.660
31	Kendrikela RF	196.276	196.276	156.530
32	Talita RF	101.983	101.983	101.980
33	Sundhikon RF	62.320	62.323	62.320
34	Chandiposh RF	61.918	61.918	61.918
35	Toda PRF-III	225.820	287.813	123.000
36	Khandadhar PRF	1694.698	1570.375	30.000
37	Sarkunda PRF	6434.641	4950.313	484.000
38	Lunga PRF	283.286	257.063	40.000
39	Gurundia PRF	1498.280	905.501	40.000
40	Bandhabhuin- Bhadimara PRF	564.346	851.125	629.240
41	Khajurdihi PRF	3474.301	3634.313	80.940
42	Budhapahar 'B' PRF-Part-I	416.835	392.501	10.000
43	Bhawanipahar PRF	1473.087	1290.313	315.000
44	Nagaria PRF	7709.429	9684.811	515.060

45	Balia Part-I PRF	170.254	133.750	51.00
46	Balia Part-II PRF	358.155	280.625	128.00
47	Kantamunda-I PRF	474.463	519.250	50.000
48	Kelo PRF	62.322	72.375	62.320
49	Raipiri PRF Part-I	323.269	289.562	253.000
50	Kathmal PRF	213.678	213.678	101.17
51	Amrudhi PRF	1744.233	1580.500	523.000
52	Talbahali-Barhaguda	377.984	347.813	154.270
53	Nalaghati – Rajabasa PRF	607.061	678.625	104.000
54	Kusumdihi PRF-III	246.118	277.750	17.000
55	Budhapahad(A) PRF	656.819	685.938	127.000
56	Soyamba PRF	23.957	23.957	23.950
57	Ulundapahar DPF	167.770	167.770	104.710
58	Bijakuli-Beldihi DPF	658.230	658.230	407.820
59	Singardei DPF	111.323	111.323	111.320
60	Tinko DPF	141.744	141.744	112.000
61	Kello-II DPF	129.988	129.988	4.000
			Total	13.969.178
Village Forests				
1	Bad-Baurkela VF	5.422	5.422	5.422
2	GopinathpurVF	1.934	1.934	1.934
3	Kenaveta VF	3.439	3.439	3.439
4	Uparbahal VF	1.092	1.092	1.092
5	San BhaldunguriVF	5.058	5.058	5.058
6	Govindpur VF	5.058	5.058	5.058
7	Dareikela VF	1.315	1.315	1.315
8	Uparpada VF	10.117	10.117	10.117
9	San Gogua VF	6.070	6.070	6.070
10	Babu Nuagaon VF	7.082	7.082	7.082
11	Bandadihi VF	4.350	4.350	4.350
12	Bad Baurkela VF	5.058	5.058	5.058
13	BalitakudarVF	10.000	10.000	10.000
14	Kasada VF	8.000	8.000	8.000
15	BhaldunguriVF	5.977	5.977	5.977
16	Khandapat VF	4.552	4.552	4.552
17	Mankada Chuan VF	16.187	16.187	16.187
18	BartengadaVF	4.046	4.046	4.046

19	Kadadihi VF	2.023	2.023	2.023
20	Ruguda VF	5.058	5.058	5.058
21	Sihidiha VF	5.058	5.058	5.058
22	Mahuldiha VF	1.011	1.011	1.011
23	Ruguda VF	5.058	5.058	5.058
24	Tankjoda VF	0.809	0.809	0.809
25	Madhupur VF	1.416	1.416	1.416
26	Belkudar VF	4.000	4.000	4.000
27	Basubahal VF	3.600	3.600	3.600
28	Gadruan VF	8.000	8.000	8.000
29	Kanujoda VF	6.000	6.000	6.000
30	Ruguda VF	10.000	10.000	10.000
31	Bichhanapati VF	4.000	4.000	4.000
32	Rangamatia VF	6.000	6.000	6.000
	Total :-	166.790	166.790	166.790
			Grand Total :-	14135.968

Details of VSSs formed in Bonai Forest Division is furnished in **Appendix-XI**

Out of 299 JFMC/ VSS, in 193 VSSs, various plantations and other activities have since been taken up over an area of 11,572 Ha during the period from 2004-05 to 2020-21 as detailed below.

Sl. No.	Scheme	Target in Ha.	Achievement in Ha.	Balance in Ha.	No. of VSS involved.
1	2	3	4	5	6
1	OFSDP- Phase I	8,262	8,262	-	100
2	Ama Jungle Yojana	-	-	-	-
3	NAP(FDA)	2,850	2,510	340	73
4	Support to VSS	800	800	-	20
	Total:-	11,912	11,572	340	193

8.3. General Characteristics of Vegetation:

Different types of degraded forests are allotted to this Joint Forest Management (Overlapping) Working Circle. Most of the degraded forests allotted to this working circle overlaps with rehabilitation working circle and hence, the characteristics of vegetation are same as described under the Chapter 'Rehabilitation working circle'.

The crown density of the crops standing over this working circle varies from 0.2 to 0.6. Soil is generally highly eroded and susceptible to sheet erosion and gully erosion. In some parts, the top soil got washed away exposing the hard morums and rocky surface. Sal is the principal species. The area is dominated by miscellaneous vegetation consisting *Anogeissus latifolia*, *Termilaia tomentosa*, *Ougeinia dalbergioides*, *Syzygium cumini*, *Albizzia*, *Emblica officinalis*, *Adina cordifolia*, *Syzygium cumini*, *Mytragyna parvifolia*, *Aegle marmelos*, *Albizzia procera*, *chleichera oelosa*, *Holerrhena antidysentrica*, *Nyctanthus arbortristis*, *Ixora arobrea*, *Indigofera*, *Combretum decandrum*, *Casearia tomentosa*, etc. Crop confirms to Northern dry deciduous forests and dry peninsular Sal forest. Due to biotic interference, degraded forests were there, however have started showing signs of rejuvenation especially in Revenue Forest. Sal crop and its associates in forests of this working circle constitute of all age classes.

The growing stock per ha in these forests is relatively poor since the forest crop is largely degraded. Majority of areas included under this working circle have potential for rapid improvement. Since degradation of these forests happened because of relentless biotic pressure, proper rejuvenations measures through proper Joint Forest Management, a lot of benefits towards forest protection can be resulted.

8.4 Special Objectives of Management :

- i. To involve local communities in forest and natural resource management.
- ii. To make the people and Forest Department equal partners in management.
- iii. To protect the degraded forests from biotic interference.
- iv. To restock the barren and blank areas through artificial regeneration.

- v. To increase the productivity of soil through suitable soil and moisture conservation activities.
- vi. To encourage people for rational utilization of their own community resources for the betterment of the community.
- vii. To involve people in NTFP collection and trade as mandated in FRA, 2006.
- vii. To create income generation activities in the villages protecting the forests.

8.5 Analysis of Crop: As mentioned earlier the forest blocks allotted to this working circle are degraded Reserved Forest, Proposed RFs, Demarcated Porotected Forests, Village Forests, Revenue Forests/Khesra Forests etc. Growing stock estimation of these blocks have been made by Stratified Random Sample Points inventory method . The growing stock per hectare in these blocks is relatively poor since the forest crop is largely degraded with shrubby growth. All these blocks have potential for rapid improvement since they have rooted waste, coppice shoots and pole crop. Degradation of these forests have taken place due to heavy biotic pressure on these forests. Already signs of improvement is being seen as a result of proper implementation of JFM activities in many JFM areas in the recent years. It is expected that with the active involvement of VSS and increase in allotment of funds for these degraded forests most of the drivers of degradation can be arrested leading to rejuvenation of the crop.

8.6 Silvicultural System: As per the JFM Resolution of the State, micro plans need to be prepared for each VSS, in which activites to be taken up in the VSS areas shall be planned and recorded. Restoration of degraded forest areas will be given importance in the microplan, it is expected that the micro plans are to be prepared in conformity with broad prescriptions of Rehabilitation Working Circle. The VSS microplans will be site specific treatment plan and will generally follow the prescription of the Rehabilitation Working Circle. Under no circumstance the micro plan prescriptions shall be in beyond the Working Plan prescriptions, and hence no separate silvicultural system need to be prescribed under this chapter.

8.7 Method of Execution of Operations:

8.7.1 The important task is to demarcate the areas assigned to the VSS for protection and management. It helps to resolve tenurial conflict between villages and gives the VSS members a sense of ownership and specific identity which eventually motivates them to protect the forest and helps for the better management. Therefore, the more required is that the members of both the adjoining VSS are to be involved while taking up survey demarcation work and demarcating the boundary of the allotted areas to different VSSs.

8.7.2 Forest areas assigned to the VSS are largely in the Rehabilitation Working Circle. The microplans should be prepared keeping in view the overall prescriptions of the concerned working circles. All prescriptions for exploitation and harvest should be done conservatively. Exploitable diameter for different species for final harvest, marking rules, limiting the final yield with emphasis on conservation measures and biotic pressure etc. as prescribed in this plan should be followed while preparing the micro plans. The yield in the area assigned to the VSS should be calculated after providing for safeguard against erosion, illicit felling and other biotic pressures. In areas falling under Rehabilitation Working Circle, emphasis should be laid on gap plantations and soil and moisture conservation measures.

8.7.3 'Micro plans' should be prepared for each VSS irrespective of whether money for implementation is available or not. Planning should be done first and efforts should be made to obtain funds from different sources. While preparing the micro plans, tools like GIS could also be used for better planning. For this, the help of ORSAC can be taken. All the VSS members need to be involved at the planning stage through PRA exercise and their ideas & views should be honoured and relevant ideas need to be incorporated.

8.7.4 Micro plans shall be prepared for every VSS adopting the 'Participatory Rural Appraisal' technique (PRA). Before the preparation of Micro-Plan, forests assigned to the VSS shall be surveyed and demarcated. Pillars should be posted to avoid any future area-dispute among different Samities. A map to scale will be prepared by the field staff and enclosed with the micro plan. Different activities like plantation, soil conservation measures, silvicultural operations like tending and cultural operations, disposal of the cleaning materials, water harvesting structures, pastures etc shall be discussed in detail along with financial outlay in the micro plan. Even sharing mechanism shall also be clearly spelt out. However, the provisions of this micro plan shall be in conformity with the overall prescriptions of this working plan. The guidelines of the most recent JFM resolutions *i.e.* those came into force in 2011 and recent amendments shall be made applicable in preparing the overall micro plan for the VSS area.

8.7.5 Wherever, plantations exist in VSS allotted area, these plantations should be thinned and pruned as per requirement. Sweeping off the floor of plantations for leaves and twigs should be avoided since it affects the cycling of nutrients. Grazing and fire protection should be provided to all plantations. These prescriptions should serve as a guideline while preparing the micro plans in these areas. Efforts should be made as far as possible to identify the contiguous patches of RF and PRF and these areas should be planted with suitable species to meet the firewood and small timber needs of the villages.

8.7.6 It is important that the motivation level of the people to protect the forests should be sustained for a long period to respond to the protection provided. The gestation period of the forest to provide returns is quite long. During this period there may be conflicts amongst groups of people or stakeholders. Most of the time it is difficult for the Forest Department personnel to keep up the motivation level at the village due to the multifarious roles of field staff. Hence, it is advisable to identify genuine NGOs or eminent local persons and opinion makers like teachers, doctors,

village level workers etc. who are closely associated with the people and can convince the people and keep up their motivation level and enthusiasm. These persons and institutions should be encouraged and if possible some remuneration should be given to them.

8.7.7 In each village, efforts should be made to create sustainable income generating activities which may be forest product based. Income generating activities (IGA) like sericulture, pisciculture, vermiculture, Lac and honey collection could be encouraged through VSSs. Many NTFP items are also being collected from the forests and efforts should be made to explore processing, value addition and finding good markets for these forest based products. Entry point activities done in different programmes should aim at sustainable income generation to the villages. NGOs specialising in IGA and SHG and marketing should be entrusted with promotion of livelihood amongst the members of the VSS. These NGOs could impart vocational training on sustainable livelihood and value addition for different NTFP items.

8.7.8 Good practices and success stories from VSS should be identified and rewarded. Their success stories should be given wide publicity among other VSS members. Potential VSS villages should be taken to these successful VSS villages to get inspiration and ideas. These promotional visits would help a great deal to promote the JFM activities in the Division. State govt. has instituted different awards to VSS and other community organisations for protection and better management of forests. All attempts will be made to make all the VSS aware about such Govt. provisions and all the deserving VSS need to be rewarded.

8.7.9 The capacity of the lower functionaries of the Forest Department should be improved by imparting training and exposure visits to help them to work along with the villagers. During training, special emphasis should be on enhancement of communication skills of the staff. Proper orientation of the field staff through training, workshops and discussions on the philosophy and need of participatory forest

management should be imparted. Similarly, the VSS members also need training, exchange of ideas and exposure visits to other successful VSS areas, if possible outside the state.

8.8 CONTROL:

8.8.1 All the areas assigned to the VSS should be marked on the topo sheets of 1:50000. The works taken up in these VSS areas should be entered in the compartment histories. The checking of compartment histories should form a part of the office inspections by the Regional Chief Conservator of Forests and the DFO.

8.9 Rights and Concessions.

8.9.1 Rights and concessions in this Working Circle shall be regulated in accordance with the provisions of the relevant gazette notifications of the respective forest blocks and the Govt. of Orissa policy with regard to JFM. The existing rights and concessions have been elaborated in Part I of this plan.

8.9.2. Views of R.C.C.F Rourkela after consultation with local people forum, JFM committee, Panchayats & FDA are as follows:

- Demarcation of assigned forest areas to be done in all VSS, through proper pillar posting. While surveying, local community to be involved.
- Small scale industries need to be promoted for up-liftment of the livelihood of the local people by creating alternate income generation options.
- Small industries are to be established in the cluster villages for scientific processing of NTFP items and value addition thereof to support the income of the local people.
- Involvement of the local people in scientific collection and trade of NTFPs to be promoted.
- Entry point activities need to be taken up in order to motivate, sensitize and to ensure community participation and involvement in implementation of the projects. Various income generation Entry Point Activities are to be taken up in

the project in consultation with the local people like establishment of multi community centre, Tent house utensils, leaf plate mauling units, creation of community orchads, ponds etc.

- Improvement of soil productivity through suitable soil and moisture conservation activities to make the people engaged for betterment of the forests as well as providing income generating source to improve their livelihood to be included in micro plans.
- The VSS microplan should be site specific treatment plan and will generally follow the prescription of the Rehabilitation Working Circle and JFM working Circle. The work allotted in this working circle may be entrusted to the JFM's for smooth operation and management.

8.9.3 Community Forest Management:

Forest community rights related to use of community forest resources like minor forest produce, grazing grounds, water bodies etc. recognised under the provision of the forest Right Act 2006, can be exercised within the frame work of sustainable management.

As such there is no community claim till date under FRA'2006. Individual claims have been settled and 3633 nos. of titles have been issued covering an area of 4524.64 Acres (Or, 1831.097 ha.). The status of the land will be retained and planting fruit bearing / NTFP trees need be done in the lands allotted to the beneficiaries. Proper JFM measures need to be initiated in this regard.

8.9.4 Fringe Forest Management

Communities living in the Forest fringe villages / hamlets depend heavily on the forest for their fuel wood, small timber, bamboo and fodder needs. In rural areas fuel wood is main fuel, mainly used for cooking. The dependence of villages on fuel wood is heavy because, commercial sources of energy are not easily available due to varied reasons. Non Timber Forest Produce (NTFPs) referred to in the National income

accounts as minor forest products are source of livelihood and food security for a large number of rural communities living in and around forests. They are important to rural households in terms of their contribution to health, food, energy and other aspects of rural welfare. Grazing of domestic livestock in forest areas is another threat to regeneration in forest areas.

Proper Joint Forest Management Activities need to be taken up in convergence with other line departments to check biotic pressure in fringe forests. Some of the identified and suggested measures are:

- i. Supply of lowcost fuel efficient chullas/LPGs through the JFMCs.
- ii. Conducting awareness programmes in villages regarding various measures to reduce forest dependency.
- iii. Training and introduction of innovative methods for sustainable collection of forest resources including NTFPs
- iv. Plan and execute alternate livelihood programmes for forest dependent communities.
- v. Convergence with line departments to plan promote alternate employment opportunities to forest dependent communities.

8.9.5 List of forest areas outside the working plan area(revenue forests) which comes within the assigned forests to JFMCs : List of Revenue Forests assigned to VSSs and hence included in the present Working Plan is as shown in table 8.9.5.1

Table 8.9.5.1. List of Revenue Forests assigned to VSSs				
Sl. No.	Name of Range	Name of the VSS	Name of Forest Block	Area (in ha.)
1	2	3	4	5
1	Barsuan	Anteitol	Chordhara K.F.	50.00
2	Barsuan	Bahamba	Bahamba K.F.	70.00
3	Barsuan	Bandhal	Bandhal K.F.	120.00
4	Barsuan	Barsuan	Barsuan K.F.	50.00

5	Barsuan	Fatatangar	Fatatangar K.F.	68.00
6	Barsuan	Kula	Kula KF	32.00
7	Barsuan	Nuatantra	Nuatantra K.F	80.00
8	Barsuan	Patiatola	Manchabeda K.F.	35.00
9	Barsuan	Raikela	Raikela KF	50.00
10	Barsuan	Raikela	Raikela K.F.	52.00
11	Barsuan	Rengua	Rengua K.F	100.00
12	Bonai	Balitakudar	Balitakudar K.F	50.58
13	Bonai	Beldihi	Bijadihi K.F	50.00
14	Bonai	Bhalupani	Bhalupani KF	57.10
15	Bonai	Bijadihi	Bijadihi K.F	60.00
16	Bonai	Chudakhai	West Danpat KF	63.00
17	Bonai	Ghanshyampur	Ghanshyampur KF	53.41
18	Bonai	Gujapal	Gujapal KF	52.60
19	Bonai	Jakeikela	Jakeikela K.F	52.61
20	Bonai	Jhandamara club, Kandheiposh	Kandheiposh K.F	48.66
21	Bonai	Kantabahal	Kantabahal K.F	40.00
22	Bonai	Kantapali	Kantapali K.F	40.80
23	Bonai	Karaiput	Karaiput K.F	77.63
24	Bonai	Kasada	Kasada K.F	138.50
25	Bonai	Khajuribahal	Khajuribahal K.F	55.76
26	Bonai	Lamsi	Lamsi- Budhapahar K.F.	73.00
27	Bonai	Nuadihi	Nuadihi K.F	110.00
28	Bonai	Pithachora	Pithachora K.F	61.00
29	Bonai	Sibnathpur	Sibnathpur K.F	112.80
30	Jarda	Badibahal	Badibahal KF	40.00
31	Jarda	Balia	Balia KF	79.00
32	Jarda	Brahmandihi	Brahmandihi KF	50.00
33	Jarda	Burda	Burda KF	16.00

34	Jarda	Ghantiali	Ghantiali KF	25.00
35	Jarda	Jarda	Jarda KF	21.00
36	Jarda	Kansar	Kansar KF	24.00
37	Jarda	Kundheidiha	Kundheidiha KF	88.00
38	Jarda	Kunjaria	Kunjaria K.F	89.00
39	Jarda	Kusumnali	Kusumnali KF	70.68
40	Jarda	Niktimal	Niktimal KF	12.00
41	Jarda	Rameswari (San- Ramchhinda)	Ramchhinda K.F	50.00
42	Jarda	Regedabahal	Regedabahal KF	40.00
43	Kuliposh	Amarjyoti club, Rengali	Rengali K.F	50.00
44	Kuliposh	Arjun Jhari	Arjun Jhari K.F.	20.00
45	Kuliposh	Baba Baneswar, San- Kudheikela	Bhaluhuli K.F	80.00
46	Kuliposh	Badbil	Derula K.F.	20.00
47	Kuliposh	Badgaon	Budhapahar KF	35.00
48	Kuliposh	Badjala	Fuljhar K.F	93.00
49	Kuliposh	Bandhabhuin	Bandhabhuin K.F.	30.00
50	Kuliposh	Baneikela	Budhapahar KF	73.00
51	Kuliposh	Baraguda	Baraguda K.F	40.00
52	Kuliposh	Barghat	Bhaltunguri K.F	120.00
53	Kuliposh	Basubahal	Basubahal K.F.	60.00
54	Kuliposh	Bhagabansahi (Fuljhar)	Fuljhar K.F	50.00
55	Kuliposh	Bhogra	Bhogra K.F	40.00
56	Kuliposh	Brahmanidarh	Brahmanidarh K.F	40.00
57	Kuliposh	Budhabhuin	Budhabhuin K.F	110.00
58	Kuliposh	Budhandihi	Budhandihi K.F	99.00
59	Kuliposh	Dalamkucha	Dalamkucha K.F.	143.00
60	Kuliposh	Deoposh	Deoposh K.F	40.00
61	Kuliposh	Dhanijam	Dhanijam K.F	30.00
62	Kuliposh	Dhokamunda	Dhokamunda K.F.	10.00

63	Kuliposh	Dhudi	Sanjala K.F	100.00
64	Kuliposh	Dumermunda	Dumermunda KF	10.00
65	Kuliposh	Fuljhar	Fuljhar K.F	86.00
66	Kuliposh	Gadapali	Kudheipani K.F	80.00
67	Kuliposh	Gadruan	Gadruan K.F	40.00
68	Kuliposh	Ghatital	Ghatital KF	82.00
69	Kuliposh	Gilli	Gilli KF	50.00
70	Kuliposh	Guhalandha	Dhokamunda K.F.	50.00
71	Kuliposh	Haladikudar	Bada Jala K.F	36.02
72	Kuliposh	Jadibahal	Jadibahal KF	51.60
73	Kuliposh	Jagati	Mahulpada KF	10.00
74	Kuliposh	Jaldihi	Jaldihi KF	22.30
75	Kuliposh	Jangra	Jangra KF	70.00
76	Kuliposh	Jhankiragahira	Jhankiragahira K.F	30.00
77	Kuliposh	Jihinknali	Jihinknali K.F	135.00
78	Kuliposh	Jinkela	Jinkela KF	50.00
79	Kuliposh	Kardakudar	Khandadhar K.F.	30.00
80	Kuliposh	Kumudi	Kumudi KF	120.00
81	Kuliposh	Ladapani	Ladapani K.F.	25.00
82	Kuliposh	Maa- Tarini, Baldihi	Bhaluhuli K.F	80.00
83	Kuliposh	Maa- Thakurani, Kuliposh	Bichhakhaman Churahuli Matuali K.F	84.00
84	Kuliposh	Madhupur	Madhupur KF	50.00
85	Kuliposh	Mahulata, Rangamatia, Babehuli	Mahulata K.F	150.00
86	Kuliposh	Nagara	Pattamund KF	44.00
87	Kuliposh	Patamunda	Patamunda K.F	109.00
88	Kuliposh	Poigaon	Ranja East K.F	100.00
89	Kuliposh	Raikelaposh	Bhaluhuli K.F	95.00
90	Kuliposh	Ranja	Ranja K.F	120.00
91	Kuliposh	Ruguda	Ruguda K.F	100.00

92	Kuliposh	Rugudidihi	Patamunda K.F	132.00
93	Kuliposh	Sabra	Sabra K.F	50.00
94	Kuliposh	Sadhubahal	Sadhubahal K.F	100.00
95	Kuliposh	San- Nuagaon	Dhudapani K.F	50.00
96	Kuliposh	Shihidia	Shihidia K.F	117.00
97	Kuliposh	Talginia	Talginia K.F.	20.00
98	Kuliposh	Talkudar	Bhaliadihi KF	7.00
99	Sole	Jhaliadihi	Jhaliadihi K.F	90.00
100	Sole	Sianpali	Tukuda K.F	114.00
101	Sole	Sole	Sole K.F	102.00
102	Sole	Solguda	Solguda K.F	50.00
103	Sole	Thakurpali- Brahamanibasa	Brahamanibasa K.F	60.00
104	Sole	Tukuda	Tukuda K.F	63.00
105	Tamra	Jadalai	Kusumdihi KF	75.00
106	Tamra	Badkudar	Dhenkiam KF	12.00
107	Tamra	Bhaldunguri	Rajabasa K.F	202.35
108	Tamra	Baneikela	Baneikela K.F	106.00
109	Tamra	Bartengeda	Bartengeda K.F	50.00
110	Tamra	Belta	Belta K.F.	50.00
111	Tamra	Benuam	Benuam K.F	50.00
112	Tamra	Bhaludarth	Bhaludarth K.F.	50.00
113	Tamra	Chilbansh	Chilbansh K.F.	50.00
114	Tamra	Chirabeda	Chirabeda K.F	50.00
115	Tamra	Dhatkiposh	Dhatkiposh K.F	60.70
116	Tamra	Ghusuriposh	Kadampur K.F	50.00
117	Tamra	Girijatola	Jamudharh K.F.	50.00
118	Tamra	Jagada	Jagada K.F.	50.00
119	Tamra	Jagannathprasad	Jagannathprasad K.F.	50.00
120	Tamra	Jhakajharan	Jhakajharan K.F.	50.00
121	Tamra	Jhirpani	Jhirpani K.F.	50.00

122	Tamra	Kadampur	Kadampur K.F	50.00
123	Tamra	Kanchinda	Kanchinda KF	102.00
124	Tamra	Kantapali	Kantapali K.F	92.00
125	Tamra	Kendughati	Kendughati K.F.	50.00
126	Tamra	Keshboga	Keosboga KF	33.00
127	Tamra	Khajurimundi	Khajurimundi K.F.	50.00
128	Tamra	Khandapat	Khandapat K.F	34.40
129	Tamra	Koilijhar	Kuilijhar K.F	50.00
130	Tamra	Madhupur	Madhupur KF	54.00
131	Tamra	Makarchuan	Makarchuan K.F	50.00
132	Tamra	Matalgarh	Matalgarh K.F.	50.00
133	Tamra	Narendra	Rajabasa K.F	48.55
134	Tamra	Pankadihi	Pankadihi K.F.	50.00
135	Tamra	Rajabasa	Rajabasa KF	47.00
136	Tamra	Rani Amarabatipur	Rani Amarabatipur K.F	50.00
137	Tamra	Samleswari VSS Badgaon	Badgaon KF	27.00
138	Tamra	San- Badgaon	Rushimath KF	17.00
139	Tamra	San- Gurundia	Rushimath KF	57.00
140	Tamra	San- Jadalai	Kusumdihi K.F.	2.00
141	Tamra	Saplata (Tamra)	Tamra K.F.	50.00
142	Tamra	Satatola	Satatola K.F.	50.00
143	Tamra	Shantilata Jyoti Committee, Nalghati	Nalghati K.F	50.00
144	Tamra	Sisoodihi- Chadharia	Sisoodihi K.F	50.00
145	Tamra	Soldega	Soldega K.F.	50.00
146	Tamra	Tamra	Tamra K.F.	96.00
147	Tamra	Tirlakucha	Tiklakucha K.F.	50.00
148	Koira	Baldihi	Baldihi K.F	161.88
149	Koira	Indupur	Indupur K.F	24.29
150	Koira	Kadodiha	Mendhamaruni KF	25.00

151	Koira	Kanther- Koira	Kanther- Koira K.F	50.00
152	Koira	Kasira	Kasira K.F	101.18
153	Koira	Koira	Koira K.F	20.24
154	Koira	Nadidihi	Nadidihi K.F	40.00
155	Koira	Patamunda	Patamunda K.F	60.70
156	Koira	Patuli	Patuli K.F	40.46
157	Koira	Ranisal	Ranisal K.F	32.37
158	Koira	Sargigarh	Sargigarh K.F	20.24
159	Koira	Sonua	Sonua K.F	40.47
160	Koira	Teherai	Teherai K.F	40.46
		Total :-		9,680.34
Source : O/o the Divisional Forest Officer, Bonai Division				

CHAPTER-9

WILD LIFE (OVERLAPPING) WORKING CIRCLE

9.1 WILD LIFE (OVERLAPPING) WORKING CIRCLE:

Forests of Bonai Forest Division is characterized by the presence of wide variety flora and fauna. Forests of this division is around 69 percent of its geographical area. The distribution, continuity and density of forests of this division are very significant. The composition and continuity of forest along with climatic condition of this zone are suitable for better growth and multiplication of variety of wildlife. Wild animals are not only confined to the forest area but also distributed to areas outside forests especially cultivated fields etc.

Wildlife is an integral part of the forests and performs important functions in the ecosystem. The National Forest Policy 1988 has emphasized the need to conserve wildlife and their habitat. This working circle has been constituted for protection and multiplication of the existing wildlife, improvement of their habitat and conserves biodiversity.

9.2 General Constitution of Working Circle:

Bonai Forest Division was very rich in flora and fauna particularly prior to independence. During that time, “SHIKAR” was the prerogative of the Ruler and was confined only to royal relations, royal guest and other close friends. However, after merger of Bonai state with the province of Odisha State, the situation in respect of wild animals took a reverse turn and there were wanton destructions of wildlife both lawfully and unlawfully. Further, the wildlife habitat was severely disturbed due to excessive human interference in the form of timber operations, mining activities, Bamboo and Kendu leaf operation and collection of MFPs etc. A good portion of wildlife habitat was directly lost due to large scale human resettlement in the forest areas.

Keeping these field realities in view, for highlighting the importance of wildlife and to improve the wildlife population in this Division, constitution of this working circle has been done and this Wildlife(Overlapping Working) Circle will cover the total forest area covered under Working Plan of the Division i.e., 1,37,282.602 ha.

9.3. Special Objectives of Management:

The special objectives of the management of the Wildlife Working Circle are as follows:

- i. To protect the existing wildlife habitat through proper protection measures.
- ii. To provide improved habitat for multiplication of wildlife.
- iii. To promote wildlife in general and endangered in particular.
- iv. To check negative interactions at Human-wildlife interface through proper mitigation measures.
- v. To create awareness among people regarding the importance of conservation of wildlife and its habitat.
- vi. To plan and execute ecotourism and ecodevelopment activities to promote people's concern on biodiversity conservation.
- vii. To prevent wildlife crimes and to take stringent actions against the offenders by following existing rules and regulations.

9.4 Present status and distribution of Wildlife: The rich varied Fauna of this Division are due to existence of large stretch of forests in different density available with different type of natural habitat in plain and hilly region. The climatic condition, compactness of area and composition of forests are extremely favorable for their growth and multiplication of variety of wild animals of mammalian species, Birds, Reptiles and Fishes , insects, arthropods and micro-organisms as well. Fauna of this Division are broadly classified into following categories found in varied profiles. They are (a) Mammals, (b) Birds, (c) Reptiles, (d) Fishes. Vertebrates, their Status, distribution, habitats, Habitat quality, quantity and key areas in the division has already discussed in the Chapter 3 of Part-I.

9.5 Key issues and challenges

Major issues and challenges in the division in the field of wildlife conservation can be listed as follows.

1. Habitat degradation out of Biotic pressure on wildlife resources illicit felling, poaching, illegal collection of NTFP, encroachment etc.
2. Increasing demand of wildlife and its produces in the illegal market and the resultant threat of illegal wildlife trade.
3. Increasing incidences of Human-Wildlife Conflict
4. Habitat destruction out of increased developmental activities.
5. Inadequate focus on habitat improvement.
6. Lack of awareness among general public.

A detailed discussion on the key issues and gaps identified in the field of wildlife conservation in the division has already done in the Chapter 3 of Part I.

9.6. Strategies to be adopted.

In the background of the above said threats in the field of wildlife conservation, the following strategies have been proposed to be adopted to protect and manage wildlife and its habitat.

- i. Provision of sufficient number of Protection Squads to assist the staff in protection activities.
- ii. Improving the protection network of the division by increasing the number of camping locations and by improving the facilities in the existing camping locations.
- iii. Proper maintenance of Boundary lines to be effected
- iv. Protected area coverage (legal) to suitable areas.
- v. Ensure proper amenities and working conditions to the staff
- vi. Ensure proper co-ordination with other line departments like Roads, Railways etc.
- vii. Proper monitoring of protection activities through registers, reports and modern tools.
- viii. Inter division co-ordination to check offences in the boundary areas
- ix. Preparation of crime dossiers

- x. Sharing of information between the divisions at landscape level
- xi. Mitigating man-wildlife conflict
- xii. Proper watch on habitual offenders
- xiii. Ensuring proper participation of local people through proper eco development activities.
- xiv. Special strategies to meet Monsoon and Fire season
- xv. Proper communication strategy by good network of wireless stations and mobile stations.

9.7 Proposed Measures.

Various measures proposed to be taken up in the division to protect and manage wildlife and its habitat are as discussed below.

9.7.1 Protection and enforcement activities.

9.7.1.1. Engagement of Protection Squad: Since, the number of staff in the division is not sufficient to perform proper protection activities, it is necessary to ensure engagement of more protection squads to assist the staff in protection activities. Required number of staff in various ranges of this division has been analyzed and it is proposed to engage around 250 number of protection personnel distributed in various offence sensitive areas of the division. These squad members shall assist staff in anti-poaching and anti smuggling activities.

9.7.1.2 Improving the network of Camping locations: In order to ensure effective protection activities in the field, providing sufficient number of camping locations to the protection staff is necessary. Existing camping facilities need to be renovated/upgraded. In order to improve this camping network, more camps/barracks need to be established at Kasada, Tumbei, Pankadihi, Boneikela, Bartengla, Ludhuni, Sole, BudhaamChhaka, Mahuldihi, Balai Rf, Kunjar, Kello, Majurdima, Badgoan, Daleisara, Ranisal, Upper Khandadhar, and Raxi. It is also proposed to establish new camping locations in other locations also to improve the protection network according to necessity in future.

9.7.1.3. Field patrolling covering all vulnerable areas: Regular Foot Patrolling, Joint patrolling, Night Patrolling and Vehicle patrolling are various types of patrolling prescribed to be followed by staff to ensure for effective protection. Patrolling routes to be fixed in such a way that more number of vulnerable areas can be shared in limited time. Joint patrolling to be done in division boundary areas with staff of neighboring divisions.

9.7.1.4. Division Level mobile squad: It is proposed to constitute one division level mobile squad under the leadership of one Range Officer/DyRo . The team should contain a minimum of 2 foresters and 6 forest guards. This team will move to different parts of division for gathering intelligence and for assisting range field staff during difficult situations.

9.7.1.5. Strengthening of communication network (VHF & Mobile Phones): Presently there are 15 main VHF stations in the proposed plan area. It is proposed to repair and maintain all these stations, since functioning of all these stations is very important in ensuring effective protection activities in the division. It is also proposed to erect new VHF stations in Jamudarh, Jada, Mahuldihi, Sirigida, Kunjar, Kurmitar, Chordhara, Ranisal, Jamdihi and Gonua. It is also proposed to establish new VHF stations in other locations also to improve the protection network according to necessity in future. Present availability of Walkie talkies and mobile VHF sets are also not sufficient. New Walkie- talkies and Mobile VHF sets need to be procured for effective communication network. It is also proposed to repair and maintain the available stock of walkie talkies and mobile VHF sets. In order to improve the connectivity of interior areas, it is also proposed to issue mobile phones to all the field staff up to FG level. Android mobile phones can be used in uploading data on protection, monitoring and management activities to the website of Odisha Forest Department also.

9.7.1.6. Boundary Maintenance: Forest boundaries are to be surveyed, inspected and maintained at regular intervals and action to be taken against any fresh encroachment cases through proper legal measures. Maintenance of boundary pillars to be ensured in areas where pillars got damaged and new boundary pillars to be erected in areas where pillars are missing.

9.7.1.7. Protected Area Coverage: One continuous patch, covering parts of Tamra, Jarda and Sole Range is very good wildlife habitat and devoid of much human interference. Adequate legal protection measures need to be provided for this area by declaring this area as a wildlife sanctuary. This identified patch is of around 200 sq.KM. covering parts of Solguda RF, Kunjar RF, Kusumdhi RF, Sirigida RF, Kelo RF, Raipiri RF and Balai RF. Biodiversity potential of this area and scope of declaring the area as a sanctuary need to be studied properly in scientific way, so that attempts can be done to propose the patch as a protected area by following provisions of Wildlife Protection Act, 1972.

9.7.1.8. Annual maintenance of Roads: A road network 234 KM is there in various Ranges as shown in the following table.

9.7.1.9.: List of Forest Roads in Bonai Forest Division: It is proposed to ensure annual maintenance of these existing roads to make it usable throughout the year. For improving the mobility of staff to interior vulnerable areas of Sole Range, it is also proposed to develop jeepable earthen roads in required locations to ensure proper mobility of protection staff.

9.7.1.10. Provision of Vehicles :It is proposed to procure four wheeler vehicles for all sections and two wheeler vehicles for all beats for effective field protection in the division.

9.7.1.11. Intelligence gathering network : Intelligence gathering is very important for prevention of wildlife crime and follow-up actions. Following activities are prescribed in order to have a good intelligence gathering network.

- i. Selection of good informers from villages/VSSs.
- ii. Ensure reward for informers/staff.
- iii. One Toll-free number to be issued to the public for providing information.

9.7.1.12. Insurance coverage for Protection Staff: It is proposed to ensure life insurance/ health insurance coverage packages for all protection squads working in the division.

9.7.1.13. Strengthening of Staff amenities: Strengthening amenities to staff is very important for carrying out efficient protection activities. It is proposed to upgrade various accommodation facilities available in various locations through proper repair and maintenance works. It is also proposed to construct new forest guard quarters at three locations (Jada, Kunjar and Fatanagar).Upgradation of accommodation facilities by providing tube wells, electricity connection, compound wall to buildings etc. also to be done in various locations.

9.7.1.14. Co-ordination with neighbouring divisions: It is proposed to conduct co-ordination meetings with neighbouring divisions at frequent intervals, to strengthen the protection activities in the border area. It is also proposed to have a system to share information regarding offences and offenders between divisions.

9.7.1.15. Co-ordination with line departments: It is proposed to have proper co-ordination with energy department and railways for checking accidental deaths of wildlife especially elephants. Sharing of elephant movement details to railways timely through proper advisories to limit the speed of trains, and co-ordination meetings with these departments on frequent intervals are important measures to be ensured.

9.7.1.16. Capacity Building of staff: It is proposed to arrange various capacity building training programmes for staff on various topics as required.

9.7.1.17. Use of modern tools / software/imageries: It is proposed to procure sufficient number of modern tools such as GPS PDA, Drones, etc. which can help in protection activities in future. It is also proposed to procure various softwares, GIS imageries etc. whenever necessary for planning / executing protection activities.

9.7.1.18. Protection from Grazing: The wildlife rich areas shall be closed for grazing. However, grazing may be controlled else where as per the provisions of the Orissa Forest (Grazing of Cattle) Rules, 1980. The local people and the VSS members may even be motivated to immunise their cattle in consultation with veterinarians against anthrax and FMD (Foot and Mouth Disease) so that these epidemics are not transmitted to wild animals of adjoining forest blocks.

9.7.2. Forest Fire Prevention and Reclamation

Various activities to be planned to protect forest and wildlife resources from the threat of forest fire. Various activities proposed to be implemented in this regard are as detailed below.

1. Fire Protection and reclamation plan to be prepared every year, in which fire vulnerable areas to be analysed and prevention and fire fighting activities to be planned, by keeping in view the available and required resources including man power.
2. Preparedness of staff to be ensured well in advance through proper training programmes/ briefing sessions.
3. Fire lines to be traced in different areas. According to vulnerability to forest fire, fire lines are required to be traced in various locations.

4. Necessary number of fire fighting squads to be engaged for assisting staff in fire protection activities. Additional squad required for fire protection activities in various ranges need to be analyzed, and to be engaged timely.
5. Necessary number of fire fighting equipments to be procured in advance. Fire axe, Fire blower, torch lights to be provided to the fire fighting squad, solar lights, etc. need to be issued.
6. In order to ensure proper mobility of the staff in the field, if more vehicles are required, it needs to be hired.
7. Temporary camps to be established in areas wherever necessary.
8. VSSs to be involved actively in fire protection activities. Incentives to various VSSs to be provided for active participation in fire protection activities.
9. Proper public awareness measures to be planned and executed.
10. One proper detection, response and reporting system to be followed. All VHF stations to be functioned on 24 hour basis.
11. Analysis of fire burnt areas and proper reclamation measures to be done.

9.7.3. Wildlife Monitoring: Continuous monitoring of wildlife and its habitat is very important in ensuring proper wildlife management. In order to assess the healthiness of wildlife populations and habitat quality to support these populations, properly planned & continuous monitoring activities is important. Regular Wildlife monitoring activities are neglected part of wildlife management in many areas. Apart from wildlife census activities conducting state-wide, regular wildlife monitoring activities are usually not in practice. In order to assess of population trends of various wild animals and hence the habitat quality, it is proposed to have a regular wildlife monitoring plan in the division. Various activities proposed are as discussed below.

9.7.3.1. Establishment of wildlife monitoring cell: It is proposed to constitute one wildlife monitoring cell at the Division Office. All the monitoring data being collected from the field will be complied at this cell. This data will be compiled at division level, so that it can be used for future wildlife Management. It is also proposed to engage two research scholars (post graduate level) in wildlife monitoring cell, who can provide necessary trainings to field staff regarding various wildlife techniques and methodology

regarding data collection. They shall also be given the charge of timely collection and compilation of monitoring data.

9.7.3.2. Maintaining daily patrolling logs/registers at beat level: Forest guard in charge of the beat to be given the responsibility of collection of direct and indirect evidences of wildlife in his/her beat area, and record in the register meant for it. Collection of these evidences can be done, while doing regular patrolling in their beat area. If required, necessary data collection from identified line transects can also be planned

9.7.3.3. Population estimation programmes at division level: Population estimation of various carnivores/co-predators/herbivores can be planned at division level. It is proposed to conduct population estimation exercises for reptiles, small mammals, and amphibians.

9.7.3.4. Recording data from PIPs: Pressure impression pads may be maintained to collect the indirect evidences of carnivores. The data to be collected in the prescribed Performa and to be sent to the Wildlife Monitoring cell for analysis.

9.7.3.5. Camera trapping: Camera trapping is a widely using wildlife technique today. It is proposed to procure necessary number of cameratraps for the division, and to plan grid-wise continuous monitoring of carnivores in potential areas. It is proposed to procure 140 number of camera traps in the division.

9.7.3.6. Monitoring of Birds: Bonai landscape is characterised by the presence of a variety of bird species including aquatic birds. It is proposed to have regular bird census programmes (for both terrestrial birds and water birds) in the division. Also it is proposed to provide sufficient training to the staff in this regard. Sufficient number of Binoculars may be purchased and issued to the staff.

9.7.3.7. Vegetation Survey: It is proposed to conduct vegetation survey by using permanent preservation plots. These preservation plots can be laid, and monitoring at regular interval can be done.

9.7.3.8. Use of GIS/GPS tools: Use of GPS PDA or relevant software can be ensured for wildlife monitoring . In order to achieve this necessary tools such as GPS PDAs, Mobile phones etc, to be procured. Also necessary software components also to be procured. Software for monitoring may also be procured.

9.7.3.9. Procurement of necessary equipments: It is proposed to procure necessary number of various equipments for wildlife monitoring activities in the division. Some of the identified equipments in this regard are (i) Computer printer and other accessories for wildlife monitoring cell (ii) Laptops at range level for collection of data from the field (iii) Mobile phones for field staff (iv) Wildlife Census Kit(for PIP monitoring) (v) Camera traps and accessories (vi) Digital Cameras (vii) Video Cameras

9.7.3.10. Wild life health monitoring: Maintenance of records regarding health of wild animals, history of disease occurrence, epidemics and death, would help in working out cyclic patterns, if any, pertaining to any disease and to take up preventive measures. It is therefore suggested to maintain a permanent register for this purpose in the format given in table 9.7.3.10.1

Table 9.7.3.10.1 Format for Animal Health Monitoring Register							
Sl. No.	Species	Detection of Death (Date & time)	Cause of Death		Disease diagnosed	Number of deaths	Postmortem details
			Natural	Un-natural			

9.7.4. Habitat Management

Improving the habitat conditions to ensure required levels of food, water and shelter to wildlife is very important in wildlife management. Various activities under this head aim to achieve the restoration of the degraded and fragmented habitats and to adopt landscape approach in conservation.

Food, water, cover and space are the most important components of any wildlife habitat. Before implementing any scheme furthering the cause of wildlife it is very much essential to have an advance evaluation of the concerned wildlife habitat. While evaluating the wildlife habitat, various physical and biological parameters are to be considered. The physical parameters which are important for the evaluation of a habitat are climate, topography, edaphic features, incidence of fire, and spatiotemporal availability of water. Likewise, the biological parameters include availability of cover and fodder in respect to wild fauna, species diversity with their distribution and number, feeding activities and reproduction. During evaluation of habitat, all these parameters are to be integrated for getting an overall index of habitat suitability. Habitats to be evaluated should be clearly delineated on the map. For the improvement and development of wildlife habitat of this division, following measures are to be ensured.

9.7.4.1. Measures for Improving Food Availability:-

Food is an essential pre-requisite for any living organism. Food availability in a habitat changes with the season. Herbivores depend on plant materials for their sustenance and are normally selective feeders as their food preferences are related to palatability. Carnivores survive on the availability of prey animals. Various measures suggested for improving the food availability to wildlife are as discussed below.

(a) Protection of representative forest patches with palatable food of wildlife.

Herbivores prefer the leaves, barks, twigs, flowers, fruits and seeds of species like *Mallotus philipinensis*, *Dendrocalamus strictus*, *Adina cordifolia*, *Albezzia lebbek*, *A. Procera*, *Aegle marmelos*, *Ageratum conzyoides*, *Bauhinia purpurea*, *Bomboxceiba*, *Careya arborea*, *Cassia fistula*, *Ficus bengalensis*, *F.religiosa*, *Garuga Pinnata*, *Kydia calycina*, *Oogeinia oojeinensis*, *Lannea coromandelica*, *shorea robusta*, *Syzygium cumini*, *Terminalia alata*, *Terminalia bellerica*, *Zizyphus mauritiana*, *Atylosia Spp*, *Cynodon dactylon*, *Heteropogon contortus* etc.

Wild elephants feed on barks and leaves of species like *Ficus bengalensis*, *F.religiosa*, *Mallotus philipinensis*, *Dendrocalamus strictus*, *Oogeinia oojeinensis*, *Bombox ceiba*, *Kydia calycina*, and *Shorea robusta* etc.

Deer, Macaques, Langur, Rats and Hares feed on wild fruits of plants like ficus spp. *Terminalia bellerica*, *Buchanania lanzan*, *Aegle marmelos*, *Syzygium cumini*, *Schleichera oleosa*, *Embllica officinalis*, *Lantana camara*, *Grewia hirsute*, *Diospyros melanoxylon* and *Zizyphus mauritiana* and help in dispersal of fruits and seeds of these species in the forests.

Among the plant materials, grass constitutes a major portion of the herbivores' food. Grasses which are highly preferred and consumed by herbivores have been furnished in the following table **9.7.4.1 (a)**. As far as possible efforts need to be made to raise these grass species in the forest area.

Table 9.7.4.1. (a) List of grass species which are highly preferred and consumed by herbivores		
Sl.No.	Grass species	Herbivores which prefer & consume the grass species
1	<i>Agrostis brachiata</i>	Gaur and smaller herbivores
2	<i>Anthistiria gigantea</i>	Elephant and Gaur
3	<i>Axonopus comressus</i>	All grazing herbivores
4	<i>Brachiaria ramose</i>	Smaller herbivores
5	<i>Capillipendium assimile</i>	Gaur, deer and smaller herbivores
6	<i>Centotheca lappacea</i>	Deer
7	<i>Chrysopogona aciculatus</i>	Seedling are grazed by medium size herbivores
8	<i>Cymbopogon pendulus</i>	Gaur and Deer
9	<i>Digitaria biformis</i>	Gaur and smaller herbivores
10	<i>Digitaria longiflora</i>	Smaller herbivores
11	<i>Digitaria sanguinalis</i>	Gaur and smaller herbivores
12	<i>Eragrostis pilosa</i>	All grazing small herbivores
13	<i>Ischaemum angustifolium</i>	All smaller herbivores
14	<i>Ischaemum aristatum</i>	Elephant and Gaur
15	<i>Oryza granulata</i>	Deer
16	<i>Panicum flavescens</i>	All the wild herbivores
17	<i>Panicum repens</i>	All smaller herbivores
18	<i>Paspalum orbiculare</i>	Deer
19	<i>Rottboellia compressa</i>	Smaller herbivores
20	<i>Rottboellia exaltata</i>	All large herbivores
21	<i>Rottboellia protensa</i>	Smaller herbivores
22	<i>Saccharum aruundinaceum</i>	All herbivores
23	<i>Saccharum bengalense</i>	Elephant, Gaur and Deer
24	<i>Saccharum spontaneum</i>	All large herbivores
25	<i>Setaria glauca</i>	All smaller herbivores
26	<i>Setaria palmifolia</i>	All herbivores

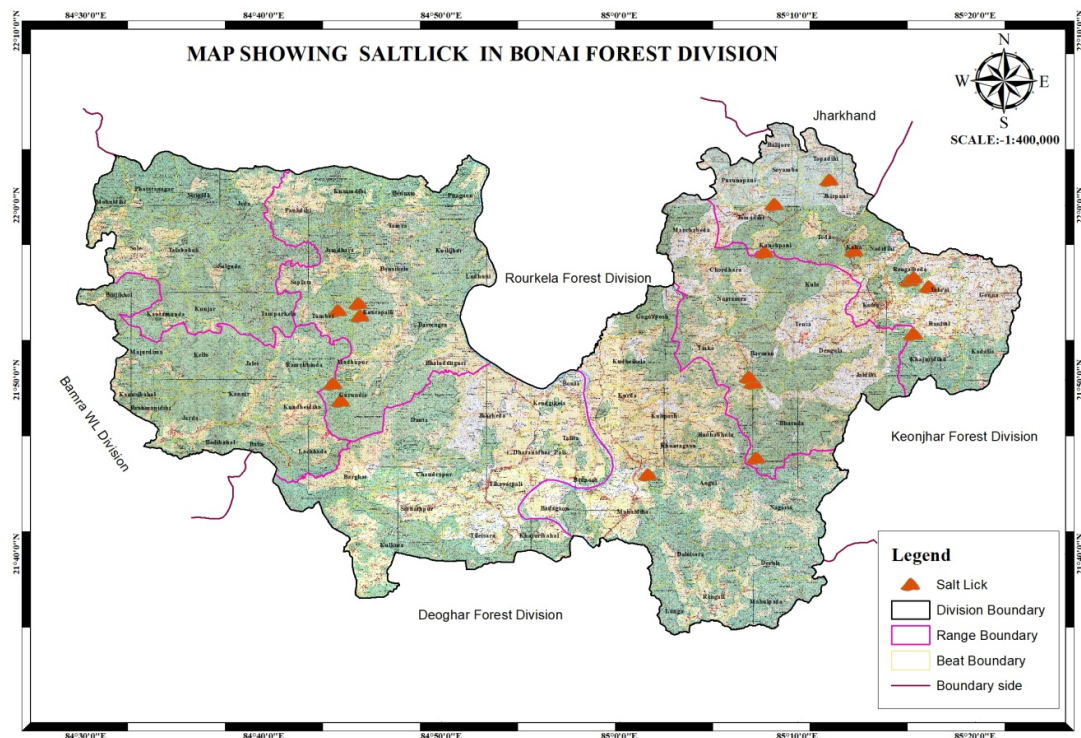
(b) Development of meadows: This division does not have extensive grass lands (meadows). However, scattered patches of grasses are available. The available grass species are not very nutritive and some of them are even unpalatable. For improving the food availability of herbivores, there is a great need of improving the existing food stock by raising suitable mix of the grass species of annual and perennial nature along with leguminous shrubs and trees. For improving the food availability of herbivores, meadow or grassland development activities are required across the division in all the ranges. Areas along the nallahs and small plain patches in the forest areas need to be developed and/or improved for grasslands. In addition to development of meadows, there are many species of plants particularly in the ground flora and in the middle canopy which are very good fodder for wildlife. Plant materials like leaves, barks, twigs, flowers, fruits and seeds of many species are very good fodder for the wildlife. Some of them are *Mallotus philippinensis*, *Dendrocalamus strictus*, *Adina cordifolia*, *Albizzia lebbek*, *Aegle marmelos*, *Cassia fistula*, *Ficus bengalensis*, *Ougeinia ougenensis*, *Shorea robusta*, *Syzygiumcumini*, *Terminalia alata*, *Terminalia bellerica*, *Zizyphus mauritiana*, *Bombax ceiba* etc. Plantation of such species should be made within the meadows .

(c) Eradication of invasive species: *Lantana camera* & *Eupatorium odoratum* are two prominent weeds noticed in the area. Eradicating such invasive species may be taken up in a phased manner in order to improve the quality of wildlife habitats. Uprooting is the best method as this prevents further growth and regeneration of the unwanted species. The removal of invasive species may involve (i) its removal by cutting rootstock, (ii) weeding of saplings from beneath the trees and (iii) ecological restoration of weed-free landscapes, preferably to the grassland, or forest communities according to the needs of stakeholders to prevent reinvasion of the same species or secondary invasion by another alien species.

(d) Assisting regeneration of Bamboo and other fruit bearing species: In order to improve the desirable fodder stock, assisting natural regeneration of bamboo and other fruit bearing species can be done in identified areas.

(e) Maintenance of Saltlicks: For the wild herbivores, even if the food is available in plenty, it is not sufficient to meet their salt requirement. For that reason, the wild herbivores depend on the naturally available salt licks. The natural salt licks are basically the areas having high salt concentration. Such areas are usually available along the nala site and in foot hills portions of this Division. Sincere efforts are to be made at the Division level to identify and protect the areas which are having high salt concentration and frequently visited by herbivores. Artificial salt licks can also be provided near the existing water holes at convenient places on the embankment. Roadside cuttings and natural pits dug by sloth bear can be used sometimes for this purpose

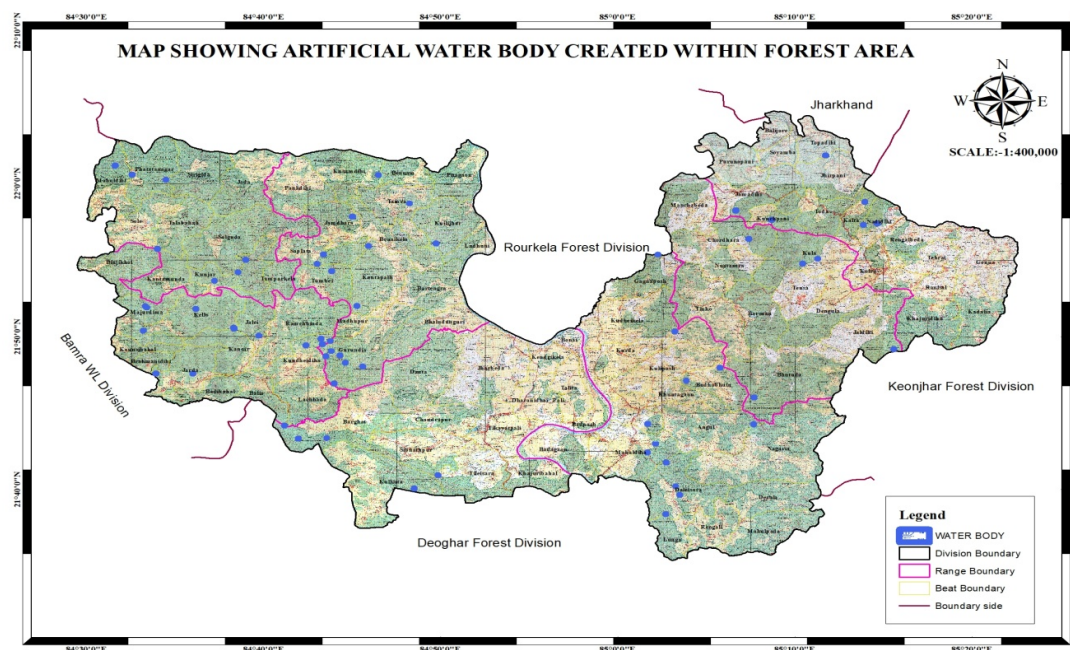
Map showing saltlicks in the Division is as follows:



(f) Silvicultural measures: The adequacy of food in a particular wildlife habitat depends upon the quality and quantity of food produced and the animal population living therein. Though, no research findings pertaining to the food adequacy for the wildlife population in the Division are available, however it is not expected to be very low considering the relatively good and dense vegetative cover. Keeping the wildlife aspect in mind, the exploitable diameter of various species has to be kept on higher side and

the percentage of removal of exploitable size trees to be properly regulated and safe guarded. Likewise, various subsidiary silvicultural operations like opening of canopy, thinning in congested patches, improvement felling etc. to be prescribed for improving the general availability of food. The details of silvicultural operations which are to be taken up for improving the wildlife habitat has been dealt under para sub titled 'Silvicultural measures'. Necessary research/ study in respect of availability of food and carrying capacity pertaining to wildlife population to be taken up. Necessary measures of protection from grazing by domestic cattle in the fodder deficient areas and in the key habitats of important wild animals are also to be taken up.

9.7.4.2. Measures for improving water availability: -The presence of adequate water resources in the form of waterholes, rivers, streams etc. is of utmost importance in the wildlife habitat. All the existing water holes within the Division have identified and delineated on the map. The availability of water during various seasons should be assessed. The distribution of waterholes in a habitat and their interspersion with the cover types determines the distribution of wild animals and consequently affects the utilization of a habitat. Water bodies them-selves serve as habitat for several species of animals and birds. This Division is having a number of perennial and non-perennial streams, details of which have already been furnished in Chapter 2 of Part I of the plan.



(i) Creation of new water bodies and renovation of existing water bodies

For their round the year utility, it is necessary to protect all existing water holes and to construct small check dams on plateau and upper slopes of all important nallas. In order to improve availability of water to the wildlife, water holes in evenly distributed manner should be created. While creating water holes, site selection is very important and location where water can be retained during hot summer should be selected. For better protection of the water holes, plantation of edible trees should be raised near the water hole.

There are several waterholes and game tanks within the division area which are not maintaining for long time and found to be unable to restore water and are proposed to be renovated in a phased manner by reinforcing the bunds and increasing the depth by digging. Desiltation of waterholes need to be done in order to ensure the water retention capacity of the waterhole and also to ensure the good quality of water.

(ii) Measures to ensure water availability to wildlife during peak summer.

During the winter and rainy season, water requirement in respect of wild fauna can be considered adequate. However, during summer season many streams get dried up and water becomes a scarce commodity, particularly in the hilly and drier localities of Tamra, and Bonai Ranges. For making the availability of water to wild fauna in all seasons possible, it is necessary to protect all existing water holes and to construct small check dams on plateau and upper slopes of all important nallas. From better wildlife management point of view, it is necessary to have a waterhole for every 15-20 sq Km of forest area. The Division should also initiate steps for carrying out inventory of water holes on regular basis.

In order to ensure water availability to wildlife during peak summer, it is also proposed to construct water storage structures like small diameter concrete rings nearby roads at regular intervals and to provide water to these structures by using water tankers.

(iii) Soil and Moisture Conservation Measures: The sites subjected to erosion can be recovered through proper soil and moisture conservation measures. Various soil and moisture conservation measures include gulley plugging, Loose Boulder check Dams, Concrete check dams, Gabion check dams, Contour trenches, graded earthen bunds, staggered trenching, etc.

9.7.4.3. Measures for Improving the Cover: Providing adequate cover to different wild animals is an important element of habitat improvement programme. The cover within a habitat is essentially a variation which provides shelter as well as protection to wild animals from weather, predators or enemies by offering a better vantage point and it can be vegetal and non-vegetal in nature. To improve the availability of shelter to different animals very selective removal of mature trees without creating a lasting gap in canopy in the areas under selection working circle has to be prescribed. The measures like improving the density of forest and its composition, loose piling up of debris, no felling of trees within radius of 50 meters along nalla, water holes, wallows saltlicks and core habitat of wild animals etc. have also been prescribed for improving the cover for different wild species. Measures should also be taken for improving the proportion of Sal and other semi-ever green species. The pure plantations are to be avoided and in the mixed plantation, ground flora and middle storey to be developed and maintained.

9.7.4.4. Measures for Improving Wilderness : Most of the forest areas of this Division have been subjected to severe biotic interference due to increasing human population pressure and prevailing poverty and there has been rapid shrinkage of wilderness. Maintaining the vast wilderness available in its natural condition free from biotic interference and disturbances is one of the prime requirements in habitat improvement programme. To achieve this, following steps are proposed to be taken up.

- (i)** Forest areas frequently visited by wild animals for food, shelter, water, etc. and the areas which are supporting the key habitats of different wild animals and birds are to be identified and delineated in the map and efforts are to be made to reduce the biotic interference to the minimum possible level in such areas.

- (ii) The domestic cattle population of this Division is very high. Most of the domestic cattle maintained by local inhabitants are uneconomic from milk yield point of view and are left stray in forest areas for grazing purpose. This has not only caused the shrinkage of wilderness but also reduced the food availability. It is high time that the local inhabitants are persuaded to reduce their uneconomic cattle population and should also be taught and encouraged for stall feeding
- (iii) Mining operations within the interior forest areas are to be regulated in such manner so as to cause minimum damage and disturbance to the wildlife.
- (iv) Proper measures are to be taken up for preventing illicit felling, poaching, encroachment, shifting cultivation, setting of fire.etc.
- (v) Mulching in the dry areas to be carried out.
- (vi) Forest Fire is another factor which hinders the quality of habitat. Effective fire control measures to be planned.

9.7.4.5. Maintaining Special Habitats

Special habitats are biological in nature and provide habitat functions for small wild animals. They include snags, snag recruits, den trees, down wood, isolated large old trees, trees with fluting boles, buttresses, lianas, some significant species of fruit bearing trees and shrubs. These special habitats have been neglected in the past. Care should be taken while implementing the plan to maintain these special habitats especially in the areas coming under the Selection working Circle.

- (i) **Snags** : As a rule of thumb, attempt should be made to maintain at least the 5 tallest and largest diameter snags per hectare, in a well distributed design in all silvicultural treatments. Retained snags need to appear in the compartment history. These are vital for a variety of primary hole-nesting birds like Woodpeckers and Barbets, which are colonized by secondary hole-nesters like Hill Mynas, Rollers, Owlets etc during subsequent years.

(ii) Snag recruits: It should be endeavored to maintain 5 snag recruits per hectare. These are dying trees, mostly affected by heart rot fungus but not quite dead. They can be recognized by their external symptoms. All such trees, which are being retained, need to be reflected in the compartment histories. These, along with snags provide a very good substrate for epiphytic orchids, especially of genus *Dendrobium*.

(iii) Large oldtrees : These would naturally occur in low densities. The *Ficus* sp. should not be counted among these since *Ficus* is not felled even otherwise. Large old trees of different species as and when encountered need to be reserved in any felling/tending operation. These retained trees (2 to 4 per ha) need to be entered in the compartment histories as they serve as daytime roosts/nesting sites for large owls of *Bubo* sp.

(iv) Trees with fluting boles and buttresses and holes at the base: These are expected to occur in very low densities represented by a small number of species. They provide significant microhabitat functions for small mammals like the Mouse Deer and reptiles. One such tree at least, the largest possible, needs to be retained per hectare.

(v) Lianas and tangled climbers: Climber cutting operation is a standard practice and prescription for the same is there in all working circles. However lianas provide significant habitat functions in support of mobility of arboreal animals, and depending on animal species, serve as resting and escape cover for primates. They are equally important for arboreal small carnivores, some rodents and lizards. A climber with tangles is especially important. It is recommended that at least two old spaced apart climbers per hectare be retained, and recorded in compartment histories.

(vi) Fruit bearing trees and shrubs: Prescription has been made to reserve all fruit bearing tree species in felling/tending operations, that are known to provide fruits to local human inhabitants and wildlife. The information on human use is probably complete but the same cannot be said of wildlife.

9.7.4.6. Protection of wetlands: Wetlands present in the division area need to be identified and inventorized. Proper studies regarding the biodiversity of these wetlands need to be conducted. Various threats to the existence of these wetlands need to be studied and sufficient measures need to be taken to conserve these natural wetlands. Awareness among people need to be brought to conserve wetlands. Necessary people orientation and participation in this direction need to be ensured.

9.7.5 Mitigation of Human-Wildlife Conflict and Protection of Wildlife Corridors :

Human-Wildlife Conflict is one of the identified challenges to wildlife conservation in the division. Addressing the causes of negative human-wildlife interaction and taking appropriate mitigation measures is very much important. Wild animals causing damages to people & their property in the division are mainly Elephant and Wild boar. Major threat to wildlife by people are various types of poaching attempts and chances of wildlife accidents in roads and railway lines.

9.7.5.1. Elephant movement in Bonai division: There are no resident populations of elephants in this Division. They migrate from neighbouring divisions, use the areas under the division for some time, and moves back usually.

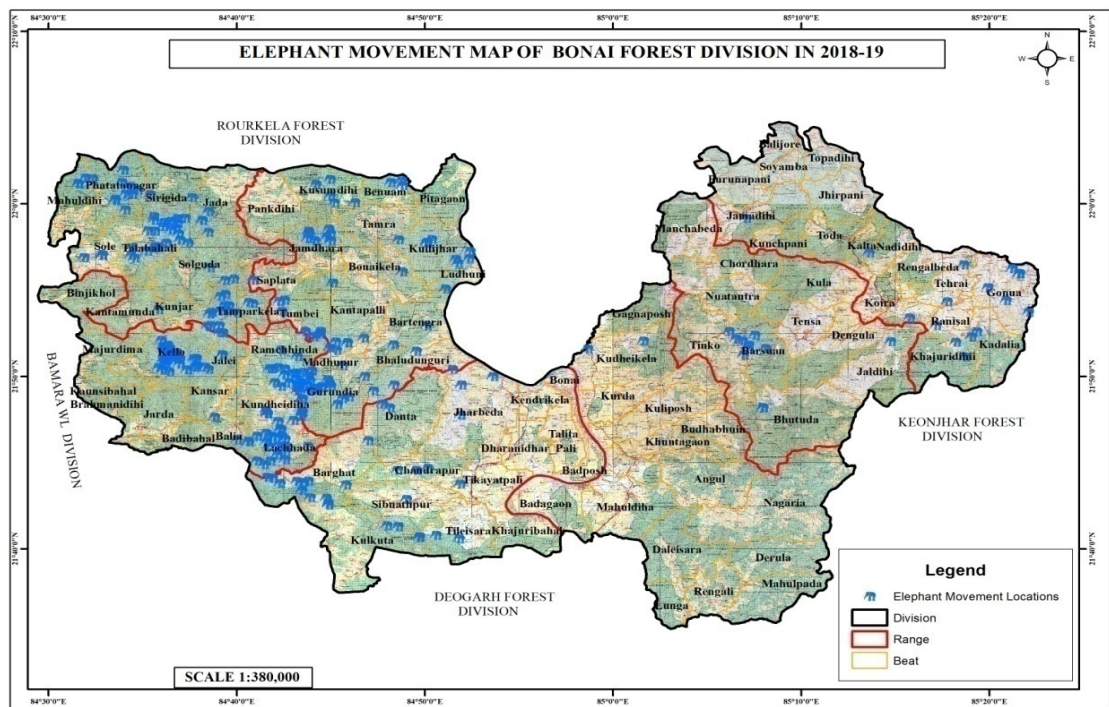
From the previously recorded elephant movement data, regular movement paths of elephant in the Division have listed as follows.

Sl. No.	Range	Elephant movement path
1.	Bonai/Jarda	Mandarsila RF of the Deoghar Division to Dandpat RF of Bonai Range, Sinduria RF(Bonai), Ulsura RF (Jarda), Balia RF (Jarda) then again return to Barajor RF of the Deoghar Division.
2.	Jarda/Sole	Barajore RF of the Deoghar Division to Balia RF(Jarda), Kello RF(Jarda), Raipiri RF(Jarda), Rushimath RF(Jarda), Kunjar RF(Sole), Kantamunda RF(Sole/Jarda) then again moved to Betajharan RF of Bamra WL Division.
3.	Bonai/Jarda/Tamra	Barjor RF of the Deoghar Division to Budhapahad RF(Bonai), Ulsura RF(Jarda), Dakmunda KF(Bonai), Porhagoth KF(Bonai), Gurundia PRF(Tamra), Gurundia RF(Tamra), Rushimath RF(Jarda), Rushimath RF(Tamra), Dhenkiam RF(Tamra) then again moving to Dhanaghar RF of Rourkela Division.

4.	Sole	Bandhawar RF of the Bamara WL Division to Sirigida RF (Sole), Balai RF(Sole), Solguda RF(Sole), Jada RF(Sole), Balai RF(Sole) then again moving to Chatam RF of the Rourkela Division.
5.	Bonai	Mandasila RF of the Deoghar Division to Dandpat East RF(Bonai), Dandpat West RF(Bonai) then again moving to Mandasila RF of the Deoghar Division.
6.	Bonai	Bhansamunda RF of the Rourkela Division to Kusumdihi RF(Tamra), Kusumdihi PRF(Tamra), Rushimath RF(Tamra/Jarda), Dhenkiam RF(Tamra) then again moving Bhansamunda RF of the Rourkela Division.
7.	Tamra	Rangamati RF of the Rourkela Division to Dhenkiam RF (Tamra) then again returning to Rangamati RF of the Rourkela Division.
8.	Kuliposh	Pangoli RF of the Deoghar Division to Lunga RF(Kuliposh), Nagaria PRF(Kuliposh), Mahulpada RF(Kuliposh) then again moving to Paburi RF of the Deoghar Division.
9.	Kuliposh	Coming from Rourkela Division to Amrudhi PRF(Kuliposh), Amrudhi RF(Kuliposh), Tinko KF(Barsuan) then again returning to Rourkela Division.
10.	Koira	Coming from Keonjhar Division to Khajurdihi RF(Koira), Khajurdihi PRF(Koira) then again returning to Keonjhar Division.
11.	Koira	Karo RF of the Keonjhar Division to Karo RF (Koira), Karo DPF(Koira), Toda DPF(Koira), Toda RF(Koira), Rakshi RF(Koira/Barsuan) then again moving to Rourkela Division.

Since these movement paths are used by elephants they should be secured and necessary measures to safeguard these elephant movement paths and elephant habitat need to be ensured while leasing out the forest land for any non forestry purpose in the above mentioned areas. Also, corridor improvement activities like plantation of edible species, creation of water body etc. may be taken up, so that elephants can freely use the movement path without being disturbed.

Map showing the movement of elephant within the division for the year 2019-20 is as shown below.



9.7.5.2 Identified Conflict areas :

Elephant movement through human habitations can be easily be understood from the above map. Since these village areas are being frequently used by elephants, it is important to plan protection and land use alteration plans in these areas, to favour movement of elephants safely on one hand and protecting human habitation on other hand. Identified pockets of human – elephant conflicts in the proposed plan area is as shown in the following table.

Name of the Range	Conflict areas (villages)
Bonai	Barghat, Danta, Dahichore, Sishudihi, Kulkuta, Pithachore, Barhachhapal, Bandhabhuin, Lamsi, Bishnudihi, Tileisara, Mushaposh, Ghosara, Nuapali, Pandurisila, Gudhiali, Ghatposh, Jharbeda, Bijadihi.
Jarda	Kello, Majurdima, Kainsibahal, Brahmanidihi, Jarda, Behedamal, San Burda, Kansar, Balia, Jalei, Kundheidiha, Lachhada, Kindro, Ramchhinda.

Kuliposh	Badgaon, Sabara, Purunapani, Gilli, Deoposh, Kumundi, Madalia, Mahulpada, Talbahali, Bhaliadhi, Khatibhaguni, Sailikudar.
Sole	Asurkhol, Tukuda, Dhengurpani, Ulundhajharan, Fatatagar, Kudabira , Sole, Sirigida, Pankdihi, Badkudar, Pandihi.
Tamra	Kendughati, Kusumdihi, Soldega, Koilijhar, Rankey.
Koira	Deughar, Khajuridihi, Kunchpani, Purnapani, Sanroxy, Jamdihi, Toda, Topadihi
Barsuan	Manchabeda, Tinko, Raikela, Barsuan, Sasyakela, Damalu, Kula

9.7.5.3. Problems in continuity of elephant movement

- (i) In Barsuan and Kuliposh range areas elephant movement is found to be disrupted because of railway line.
- (ii) National Highways and State Highways passing through the division areas also disturb the continuity of elephant movement.
- (iii) Many areas in the division are vulnerable in terms of poaching of elephants by deliberate electrocution.
- (iv) Many areas in the division are vulnerable in terms of accidental deaths of elephants by electrocution (because of sagging of electric lines etc.)
- (v) In some locations of Koira and Barsuan ranges elephant movement is detected to be blocked by mining activities.

9.7.5.4. Measures to mitigate Human-Wildlife Conflict & protect wildlife Corridors:

Various measures proposed to be adopted to prevent/mitigate human-wildlife conflict area as detailed below.

- i. **Traditional methods:** Methods used by the local communities for driving away the wild elephants from their settlements and agriculture field are beating of drums, using crackers, burning fire, etc. These traditional methods may be continued, without causing damage to wildlife.

- ii. **Watch towers in identified locations:** In order to ensure effective monitoring of elephants, it is proposed to erect watch towers in East Dandpat RF, Budhaphad, Ulsura RF, Raipir RF, Gurundia RF, and Kunjar
- iii. **Rectification of sagging of electrical lines:** Joint patrolling with the electrical department (WESCO) should be done especially in Barsuan and Koira range to rectify sagging of the conductors and tilting of poles. Spike in poles should also be provided.
- iv. **Co-ordination with railways & Energy Departments:** The Railway lines passing between Rourkela and Barsuan should be monitored by both Forest Department and Railway staff jointly.
- v. **Elephant squad/trackers:** Elephant trackers to be engaged in all ranges for monitoring of each elephant herd. Trackers move with elephant herd and will intimate the team in the next range when the herd crosses the boundary. Villagers can also be intimated early, when elephant herd moves to village areas.
- vi. **Early warning system:** Early warning systems (App based) has been fairly successful in many areas and may be tried to warn people about elephant movements close to their area. Mass messaging through modern media /group messaging system etc. may also be followed in this regard.
- vii. **Elephant proof trenches:** In identified pockets , elephant proof trenches can be provided surrounding the villages.Tukuda, Dhengurpani ,Ulundhajharan, Fatatangar, Kudabira , Sole, Sirigida, Pankdihi,Badkudar, Pandihi, Kulkuta are locations where elephant proof trenches have proposed to be established. Other areas may also be identified in this regard in future.
- viii. **Solar fencing:** Solar fencing surrounding human habitations may be provided in some conflict areas. Purunapani, Sabara, Sailikudar, and Kello are areas where solar fencing to be erected. Other areas may also be identified in this regard in future.
- ix. **Crop rotation:** Alternate crops like Rasi, Mung, Black gram, Til, Arhar in place of Paddy may be taken up to minimize elephant damage. A local variety of paddy "Sunki" may be cultivated which is not eaten by elephants. This may be tried in the forest fringe areas.

- x. **Vegetative barriers:** Thorny tree plantation at 3m spacing is a modern technique used to restrict the elephant in their native habitat which may be tried in the Division. Popularise plantation of tuber crops and cultivation of underground crops viz. colocassia, ginger, turmeric etc. Strip plantation of chilli crop should be grown around the cultivated land which shall act as a physical as well as psychological barrier for wild elephants.
- xi. **Sensitization of villagers:** The local villagers and tribal communities should be sensitised not to store Handia, Mahuli and other form of country liquor which otherwise attracts wild elephants. Mitigation of human animal conflict needs to be addressed through massive awareness and strong motivation among the communities. Positive political movement is also required to win the hearts of the public for wildlife conservation.
- xii. **Installation of solar street lights:** Solar street lights should be installed in elephant movement areas. Kello, Majurdima, Kainsibahal, Brahmanidihi, Jarda, Behedamal, San Burda, Kansar, Balia, Jalei, Kundheidiha, Lachhada, Kindro, Ramchhinda, Badgaon, Sabara, Gilli, Deoposh, Kumundi, Madalia, Mahulpada, Talbahali, Bhaliadhi, Khatibhaguni, Kendughati, Kusumdihi, Soldega, Koilijhar, Rankey, Barghat, Danta, Dahichore, Sishudihi, Pithachore, Barhachhapal, Bandhabhuin, Lamsi, Bishnudihi, Tileisara, Mushaposh, Ghosara, Nuapali, Pandurisila, Gudhiali, Ghatposh, Jharbeda, and Bijadihi are the areas identified in this regard. Other areas may also be identified in this regard in future.
- xiii. **Capacity building of villagers :** Specialised training of local youth should be done in elephant driving programme by giving them suitable incentives.
- xiv. **Insurance coverage for paddy fields:** Farmers in the depredation prone areas to be brought under crop insurance for which the premium amount should be shared by the farm owner and the government. This will help the affected farmers to a large extent to recover the loss due to crop depredation. The creation of a corpus/revolving fund should be placed at the disposal of the DFO for early payment of compassionate money.
- xv. **Providing barricading to open wells:** In order to avoid accidental fall of wildlife especially elephants to open wells in the agricultural fields adjoining the division area, it is important to provide concrete wall covering the open wells. Around

number of such locations have got identified in the proposed plan area. It is proposed to provide concrete walls with iron mesh barricade on the top of the well.

xvi. Payment of timely compassionate amount: By following govt. rules in this regard, timely payment of compassionate payment to be done to villagers affected by wildlife attack.

xvii. Application of Modern tools: It is proposed to use following modern tools for monitoring the movement of elephant and thereby reduce the conflict.

(a) Radio collaring: Elephant locations can be monitored by fixing radio collars on it. With the help of experts from Wildlife Institute of India, this exercise is proposed to conduct to monitor various elephant herds moving in and around the plan area.

(b) Real time monitoring: Real time monitoring of elephants, when entered to conflict area can be detected by using real time monitoring system. It is proposed to conduct this exercise in identified locations of the proposed plan area.

xviii. Other measures

- i. Professionally trained teams who have the ability to deal with community and rescue and rehabilitation need to be deployed immediately when any conflict occurs.
- ii. Convergence with "Swachha Bharat Mission" is required for construction of toilets and to sensitize people to actually use them. Construction and use of toilets will drastically reduce the attack of sloth bear on human being as well as reduce the compensation and public agitation.
- iii. Install signages mentioning do's and don'ts around waste disposal areas and in the human-wildlife interfaces. A separate set of signage could be installed for awareness and information of key wildlife using the area.
- iv. Use (passive) animal deterrent systems to prevent animals from entering human habitation areas. For sloth bear and elephant, sound/light deterrent system can be piloted initially to check efficacy of the system. Citizen-based early detection system could also be piloted in human-dominated areas.
- v. Introduce unfavoured plant species in order to reduce the odds of conflict.

- vi. Develop site-specific waste disposal and management plan for all areas/townships in proximity of forests.
- vii. Guard agricultural fields/granaries/orchards with fences in conflict areas. Promote the use of solar fencing or bio-fencing for sustainable approach. Fencing should selectively block entry of conflict animals, while allowing other animals to pass unhindered. Pilot different fencing techniques and monitor their efficacy to identify cost-effective solutions.
- viii. Develop actionable plans through community participation to control poaching. Implement and periodically monitor the effectiveness of the plan.
- ix. Reduce the risk of disease outbreaks and wildlife epidemics by vaccinating all domestic and feral livestock.
- x. Interstate co-ordination meeting with Jharkhand to be planned, for proper monitoring of elephants in the boarder area.

9.7.6. Wildlife Rescue and rehabilitation

There are many occasions when forest department staff to take prompt actions to rescue and rehabilitate wild animals. Straying of wild animals into human habitations, animals trapped in wells or other pits outside forest areas, animals injured by road accidents etc. are some such situations. Rescue and rehabilitation of snakes from human habitations is also an activity highly demanded by local community from forest department. In order to ensure these services, following activities are proposed under the plan.

- i. One wildlife rescue team to be developed at division level with trained staff for leading various wildlife rescue operations.
- ii. Procurement of sufficient quantity of rescue cages and equipments
- iii. Procurement of rescue vans/vehicles.
- iv. Procurement of tranquilization equipments and drugs
- v. Specialized Training of staff in rescue and rehabilitation of wildlife.

- vi. Outsourcing of trained licensed persons in rescue and rehabilitation of snakes under the monitoring of forest department staff.

9.7.7 Ecotourism, Interpretation and Conservation Education.

Ecotourism has already identified as an effective tool in conservation of natural resources. Travel to natural areas to understand the cultural and natural history of environment has got more important now a days especially people who reside in city areas. By planning this activity properly to combine elements of visitor satisfaction, alternate employment opportunities to local forest dependent community, and nature awareness measures properly, this tool can be effectively used in conservation of forests and wildlife. This is an effective tool to participate local community in conservation of natural resources.

9.7.7.1. Potential eco tourism areas in Bonai Forest Division :

Bonai Forest division with its diverse flora and fauna and panoramic greenery is one of the beautiful forest area in the state, and some sites in the division can attract more nature lovers. Important among the identified locations are

1. Khandadhar water fall & surroundings
2. Tensa
3. Rukuda Dam surroundings
4. Upper Khandadhar/Kurmitar
5. Various Water fall locations in Bonai Forest Division.

These areas can be developed as community managed nature tourism centres in order to provide nature awareness among public on one hand and to provide alternate employment opportunities to local forest dependent community on the other hand.

9.7.7.2. Community Managed sustainable nature tourism:

The concept is to plan nature tourism activities in order to achieve the following objectives.

1. To develop appreciation among the general public towards nature conservation through environmental friendly nature tourism measures
2. To provide alternate employment opportunities to the local forest dependent community.
3. To plan tourism activities without disturbing natural resources.

The nature tourism programme will be managed by local forest dependent community through VSSs. One Eco Tourism Group will be formed among the VSS members and this group will manage the day to day activities in the camp. Necessary training will be provided to the VSS members to run this ecotourism package. Formation and functioning of VSS shall be governed by existing Joint Forest Management Resolutions of the State.

Necessary infrastructural facilities shall be established by the forest department from available funds, and after construction, the infrastructural facilities shall be handed over to the community.

Revenue getting out of this ecotourism accommodation shall be shared among the VSS, ETG, and Govt through a fair benefit sharing mechanism, which will be decided through VSS resolutions. In case of ecotourism programmes, where state guidelines exist regarding the benefit sharing, these guidelines shall be applied. In specific cases decisions of VSS with the approval of DFO shall be applied in benefit sharing.

9.7.7.3. Proposed Nature Tourism Activities:

(i) Day tour facilities at Khandadhar.

As one of the highest waterfalls in the state, Kandahar Waterfall is being attracted by a lot of visitors. Many visitor facilities have already developed in the site. However, when compared to the large number of visitors coming over here, there is a need of some more facilities, to ensure controlled ecotourism activities here.

Some of the proposed activities are as follows.

- a. One orientation centre at the entrance of the waterfall to orient the visitors regarding the importance of conservation of this waterfall site, facilities in the ecotourism area and dos and don'ts to be followed by visitors here.
- b. More food courts managed by VSS/SHG groups can be established and eco friendly supply of food items may be ensured.
- c. Boating facilities
- d. One souvenir shop can be started to sell the branded products of VSSs/SHG groups
- e. Nature trails (Trekking packages) can be started in the area.
- f. Online booking facilities may be started.
- g. Parking area to be developed.
- h. Publicity and awareness measures (Brochure, documentaries, films, website etc.)

(ii) Khandadhar Nature Camp:

This is the accommodation facility located at Khandadhar for visitors. It is proposed to maintain and upgrade facilities of this nature camp in future, according to necessity, within the ambit of the existing rules and regulations in this regard.

- (iii) Tensa Nature Camp:** Tensa, as the natural hill station in the District, and is an identified potential area for nature tourism. Sustainable

nature tourism activities to support the local forest dependent community can be planned and implemented.

- (iv) Rukuda Dam: It is another potential area for developing ecotourism activities. Sustainable nature tourism activities to support the local forest dependent community can be planned and implemented here also.
- (v) Upper Khandadhar/ Kurmitar: It can be used as a day tour site. It is also suggested to have a nature camp here for promoting sustainable community managed nature tourism. Only nature friendly constructions to be promoted.
- (vi) Other waterfalls areas: There are numerous waterfalls in the division area, which are being used by people for picnic purpose especially during winter. These waterfall sites may be used as sites for developing community managed ecotourism sites , in order to protect forests and wildlife from uncontrolled tourism activities and to improve the livelihood of the local forest dependent community

9.7.7.4. Interpretation and Extension:-

Apart from recreation, tourists can be oriented towards some nature interpretation/education activities. In order to achieve this, the following activities are proposed.

1. One Nature interpretation centre can be constructed at Khandahar
2. Signage/Brochures/Booklets/documentaries etc. can be published to ensure publicity and awareness
3. Various brochures, booklets and newsletters related to various activities of Bonai Forest Division can be published.
4. Websites for various ecotourism sites, and for the division can be started.

9.7.7.5 Public Awareness Measures :

Lack of awareness among the general public is one of the important challenge in the field of wildlife management today. It is important to plan execute proper nature awareness programmes, for ensuring proper support from people in wildlife management. Various measures in this regard can be listed as follows.

1. Celebration of important days such as International Day of Tiger, wildlife week etc. with people through proper awareness programmes.
2. Awareness camps may be conducted in various schools/ colleges etc.
3. Publications at division level to spread the message of importance of conservation of nature and natural resources.
4. Competitions in schools/ villages may be organized, aiming nature awareness.
5. Nature awareness camps/ outreach programmes may be organized to important wildlife potential areas in the division. One independent website for the division for publicizing various nature conservation measures of the division can be planned.
6. Social media platforms can also be used for publicity and awareness.

9.7.8. Eco-development Activities.

Over the decades, the Division has witnessed sharp rise in the human population. However, there has been no matching development in agricultural, industrial and service sectors causing poverty in this region. Due to lack of adequate income generating avenues, the dependence of local inhabitants on the forest has been increasing over the years . Forest areas which are in the immediate vicinity of villages are under threat of serious biotic pressure. These factors cause a lot of conflict between the general public and forest department staff.

Negligence in the development of local inhabitants is bound to affect adversely the cause of forest and wildlife. It is high time to integrate the development of wildlife

and forest with the welfare of local inhabitants on a broader plain. Thus there is an urgent need for planning eco-development activities in identified areas, through which protection to wildlife potential areas can be ensured on one hand and livelihood security to local forest dependent community can be ensured on the other hand. These activities need to be planned in such a way to reduce unsustainable use of forest and wildlife resources and to strengthen community participation in conservation.

9.7.8.1 Issues to be addressed :High dependency on forests for firewood, fodder, bamboo and timber collection, lack of alternate employment opportunities among the forest dependent community, uncontrolled cattle grazing in forest areas, low agricultural productivity in some pockets, lack of effective community institutions, man-animal conflict, unsustainable NTFP collection, poverty and poor health conditions of the local community , inadequate number of staff and lack of training among the staff are issues to be addressed through these activities.

9.7.8.2. Proposed activities :

1. Existing VSSs to be motivated for protection and planned management of wildlife and its habitat.
2. Inactive VSSs to be reconstituted as per existing JFM resolutions of the state.
3. More VSSs in selected areas to be formed, if required.
4. Micro plans for VSSs to be prepared, wherever not present, and measures for protection and management of wildlife resources to be identified and incorporated in the micro plan.
5. Motivate people to generate resources like fuel wood, small timber and firewood etc/ in areas outside forests, so as to reduce the biotic pressure on forests.
6. Innovative measures may be planned to substitute large number of less productive cattle with less number of productive cattle, which feed on stallfed fodder and supplements

7. Fallow lands inside the villages may be taken to cultivate fodder species in order to meet the requirement of domestic cattle. Fodder grass species like Cow pea, Horse gram, Para grass, andropogon grass etc. may be planted.
8. Promote working groups such as Self Help Groups etc, within the village for planning and implementing eco development activities.
9. Plan convergence activities in coordination with line departments for planning various income generation activities. Small industries and cottage industries to be developed in a big way so as to provide more and more income generating avenues to the local people.
10. Reduce man animal conflict through effective measures.
11. Collaboration programmes with health sector to be arranged in order to improve the health conditions of villagers. Health/medical camps may be planned in interior villagers.
12. The literacy level among the local population is relatively very poor and there is need to improve the education facility in collaboration with concerned sectors.
13. Capacity building training programmes for staff to be arranged for developing their skills towards community mobilization for joint forest management activities.
14. Organic farming and a fair marketing mechanism for products may be planned in selected areas in convergence with agriculture department. Steps are to be initiated to develop the agriculture sector by extending supports to local inhabitants for procuring hybrid seeds, fertilizers, minor irrigation facility at subsidized rate.
15. Awareness measures among people regarding importance of their role in wildlife conservation to be planned.

9.7.9. Research, Monitoring and Training: Research, Monitoring & Training are important aspects to be considered in wildlife management.

9.7.9.1 Research: -

Forest areas of Bonai Forest Division are characterized by the presence of wide variety of flora and fauna and are ideal sites for research studies. However the area has not much utilized in this line. It is necessary to conduct proper research works to enable the division management for effective management of biodiversity in the area.

Collaboration with other reputed institutions is proposed to be planned in this regard. Guidance and assistance from the organizations such as Wildlife Institute of India, Forest Research Institute, Bombay Natural History Society, World Wide Fund for Nature and Natural Resources, Zoological Survey of India, Botanical Survey of India, Universities etc. will be beneficial. Division level research works after getting approval from necessary authority may also be planned. Some proposed topics for research works are as follows.

- i. Survey and inventorying all flora and fauna including soil flora and fauna.
- ii. Study on human-wildlife conflict and its mitigation measures.
- iii. Study on elephant corridors in the landscape.
- iv. Study on Wildlife population trends by using effective wildlife techniques.
- v. Study on rare and endangered flora and fauna in the division area
- vi. Study on the wildlife habitat quality & measures to improve
- vii. Study on the socio-economic conditions of the villagers living in the locality
- viii. Any other studies which are found to be required for the effective protection and management of forests and wildlife of this division in future

Various measures proposed to equip the division management to promote research in the division are listed as follows.

- (i) One library to be established in the division office.
- (ii) Existing GIS lab may be upgraded to equip advanced research works in wildlife.

- (iii) Documentations and Publications related to research works to be planned.
- (iv) One website to share research work results in the public platform may be created.

9.7.9.2. Monitoring:

Monitoring the effectiveness of activities proposed under wildlife management is very much important. Without proper monitoring, it will not be possible to evaluate the results of various interventions proposed under the plan. Following activities are proposed for monitoring.

- a. Analysis of wildlife monitoring results at frequent intervals with the help of reputed institutions.
- b. Regular Review meetings at the level of Divisional Forest Officer and Range Officers to assess the effectiveness of various interventions.
- c. Interactive sessions with local community to analyze the level of their involvement in implementing various activities proposed under the plan.
- d. Annual Third party evaluation with the help of reputed educational institutions/NGOs, to study the effectiveness of various activities being implemented.

9.7.9. 3. Training: -

In order to prepare the field staff to tackle various issues related to wildlife management in the field, updating their knowledge is very much important, and hence systematically planned training programmes to be conducted. Apart from the regular trainings, refresher trainings in important topics to be arranged. Also training in reputed institutions like Wildlife Institute of India may be planned for officers at the level of Range Officers. Exposure visits to various wildlife important areas within and outside the state may also be planned.

Some selected topics for training are as listed below.

- i. Collection and interpretation of evidences and biological materials in wildlife offences.
- ii. Identification of diseases affecting wild animals and information about prevention of such outbreaks.
- iii. Use of tranquilization equipments and other chemical means of restraint.
- iv. Information about the protocols for rescue and capture of various depredating wild animals.
- v. Use of Modern tools in wildlife management.
- vi. Various acts and rules regarding protection and management of biological resources.
- vii. Wildlife Population Estimation techniques

9.7.10. Implementation of Wildlife Conservation plans : In connection with each forest diversion project, the impact of the project on wildlife and its habitat need to be studied and necessary measures to safeguard these resources to be implemented through Site specific Wildlife Conservation Plans duly approved by PCCF(WL) cum CWW, Odisha. Cost for implementing this plan to be levied timely and works being approved under these plans to be executed annually without any delay. Similarly, cost of implementation of regional wildlife management plan also to be levied from user agencies of developmental projects. Works being approved under these plans need to be executed properly and timely.

CHAPTER 10

GENERAL FINANCIAL FORECAST OF THE PLAN

10.1. Expected Revenue

10.1.1. There will be a step rise in the rate of forest produce within the Plan period of 10 years. The year wise expected revenue in different items of forest produce and other sources within the Plan period for the Division is calculated and displayed below in the table. **10.1.1**

Table 10.1.1 : Expected Revenue during the plan period							
Year	Expected Revenue of different items (in Lakhs)						
	Timber	Firewood	Bamboo	NTFP	House rent	Fine	Total
2021-22	1007.18	244.30	-	3.02	2.93	9.00	1266.43
2022-23	1056.04	256.51	-	3.32	2.93	9.45	1328.25
2023-24	1107.34	269.33	-	3.68	2.93	9.92	1393.20
2024-25	1161.20	282.80	-	4.02	2.93	10.41	1461.36
2025-26	1217.76	296.94	-	4.42	2.93	10.93	1532.98
2026-27	1277.15	311.78	-	4.87	2.93	11.47	1608.20
2027-28	1339.50	327.37	-	5.35	2.93	12.04	1687.19
2028-29	1404.97	343.74	-	5.89	2.93	12.64	1770.17
2029-30	1473.72	360.92	-	6.48	2.93	13.27	1857.32
2030-31	1515.90	378.97	-	7.12	2.93	13.93	1918.85
Total:-	12560.76	3072.66	-	48.17	29.30	113.06	15823.95

10.2. Estimated Expenditure : Estimated expenditure for the implementation of working plan prescriptions and other normal plan and non-plan activities of the division is as furnished in the table -11.2

Table 10.2-Estimated expenditure for the implementation of working plan prescriptions

10.3. Yearwise abstract of Expenditure:

Yearwise abstract of Expenditure is as shown in the table 10.3

Table 10.3: Yearwise abstract of Expenditure		
Sl. No.	Year	Estimated Expenditure (in lakhs)
1	2021-22	6378.33
2	2022-23	6753.84
3	2023-24	6527.48
4	2024-25	6540.88
5	2025-26	6422.10
6	2026-27	6306.07
7	2027-28	6225.63
8	2028-29	6307.50
9	2029-30	6392.63
10	2030-31	6291.12
TOTAL		64345.56

10.4. Possible Sources of Funding :

Possible sources of funding from various sources has been shown in the table-

10.4

Table 10.4: Possible sources of funding from various sources(in lakhs)														
Year	Expected Allotment from various fund sources													
	State Plan	Non Plan	CAMPA	RWLMP	DMF	OMBADC	CSR	CSS	FDA	GIM	NBM	AJY	MGNREGA	Total
2021-22	115	100	1550	1510	600	530	50	35	20	235	15	25	1620	6405
2022-23	121	105	1628	1586	630	557	53	37	21	247	16	26	1701	6725
2023-24	127	110	1709	1665	662	584	55	39	22	259	17	28	1786	7062
2024-25	133	116	1794	1748	695	614	58	41	23	272	17	29	1875	7415
2025-26	140	122	1884	1835	729	644	61	43	24	286	18	30	1969	7785
2026-27	147	128	1978	1927	766	676	64	45	26	300	19	32	2068	8175
2027-28	154	134	2077	2024	804	710	67	47	27	315	20	34	2171	8583
2028-29	162	141	2181	2125	844	746	70	49	28	331	21	35	2280	9012
2029-30	170	148	2290	2231	886	783	74	52	30	347	22	37	2393	9463
2030-31	178	155	2405	2343	931	822	78	54	31	365	23	39	2513	9936
TOTAL	1446	1258	19496	18993	7547	6666	629	440	252	2956	189	314	20376	80561

CHAPTER- 11

MISCELLANEOUS REGULATIONS

11.1 Petty Felling and extraction:

11.1.1. Departmental Demand – There are many departmental buildings existing in this Division, which need minor repair works during the Plan period. The average annual use of timber for minor repair works of the buildings shall be within 02. Cums. Seized timber will be used for Departmental buildings works either repair or newly constructed. Petty felling is not prescribed to meet the demand of timber for Departmental use.

11.1.2. Kendu Leaf Demand – Kendu Leaf wing needs poles and brushwood for repair works of existing Phadies of Bonai Kendu leaf Range within the jurisdiction of this Division. Maximum 10 numbers of poles per year will be supplied for repair works of each phadies. Also 02 numbers of carts load of brushwood will be supplied to each phadi per year. Poles and brushwood shall be supplied on demand to the Kendu Leaf wings from the cleaning materials of any Departmental works.

11.1.3. The DFO (KL), Rourkela shall plant fast growing species around each phady to meet the annual requirement of poles and brushwood for phadies repair. The DFO (KL) shall ensure direct sowing of seeds of indigenous species in mounds around each Phady, so that financial allocation will not create bar for raising trees. The DFO, Bonai Forest Division is advised to intimate the Kendu Leaf Division about the plantation programme prescribed in this Revised Working Plan. Petty felling is not prescribed to meet the demand of poles and brushwood for repair works of Phadies.

11.1.4 Research Needs – At present there is no any research plot exist in this Division. The present scenarios of forest management needs research plots in this belt of natural forest, The D.F.O., Bonai Forest Division shall identify an area extended up to 10.00 ha for research need. Petty felling and extraction for research and training needs should be allowed.

11.1.5. Forest Road Improvement – The forest road network of the division is 234 km. This network shall be improved. Apart from this in order to improve the communication network, existing extraction paths may be improved without any tree felling. Widening and extension of extraction path is not prescribed. Petty felling for executing any works is not prescribed.

11.1.6. Special Grant – In exceptional circumstances, this Division may receive special grant of development of infrastructures, creation of new forest roads etc beyond the financial forecast during the Plan period. In any circumstances, while executing the works for utilization of special fund, petty felling in the area of forest status is prescribed, only if the purpose is to improve the protection network of the division. In other case petty felling in the area of forest status is not prescribed,

11.2. Right and Concessions:

The following rights and concession have been granted to the public in the challenge context of wide gap between demand and supply of forest materials.

11.2.1. Fuel wood: - Fuel wood Depots shall be established in all ranges for meeting the fuel wood requirement of local people. The local people of this area may not be able to pay the rate as fixed by OFDC Ltd. for firewood. The OFDC Ltd. will supply fuel wood at a minimum rate. These rates are inclusive of royalty. The consequent loss will be recouped from out of the sales in other forest produces.

11.2.2. Fire Accident: - In case of fire accidents forest materials namely, bamboo and timber will be supplied by the Odisha Forest Development Corporation Ltd. at the cost inclusive of transportation charges, on requisition from the Tehsildar as per prevailing rules.

11.2.3 Timber: - The house building materials shall be supplied from the Odisha Forest Development Corporation depots at rate fixed from time to time. The Odisha Forest Development Corporation Ltd. at their respective depots including coupe depots will supply Forest materials for agricultural implements.

11.2.4. All the above supply/sales shall be on first come first serve basis subject to availability of forest materials. Whenever necessary, Corporation will keep coal, coke and briquettes in the depots as supplementary reserve for sale to local people. Odisha Forest Development Corporation Ltd. will not sell all the timbers in round logs by auction. A part of it will be sold from the Corporation depots to the local people for their bonafide use.

11.2.5. The domestic requirements of fuel wood, timber and bamboos by the local people will be considered first. Supply of such forest produce to industrial units will however be considered only in case of surplus availability. The tenants may collect edible roots, fruits, leaves and creepers for their personal consumption without permission and free of charges.

11.2.6. The concessions granted are an obligation on the part of tenants to protect the forests and assist the forest staff in different developmental works on payment of wages to enrich the degraded forests. The Divisional Forest Officer may cancel such right and concessions for an indefinite period against an individual or group of tenants, when noticed failure to fill their obligation. They are permitted to graze their domestic animals in the unrestricted area on payment of prescribed rates.

11.2.7. The Vana Samrakshana Samiti will enjoy usufructuary benefits provided it discharges its duties and responsibilities as laid down in the Scheme. Further duties and responsibilities in the task of regeneration and protection of the forests may also be cast on the Samiti/Committee from time to time. Each household being treated as one member, if a particular household has not discharged the duties and responsibilities assigned to him, the executive committee may lessen or do away with its share.

11.2.8. Usufruct like leaves, fodder, grasses, thatch grasses, broom grasses, thorny fencing materials, brush wood and fallen lops and tops and twigs used as fuel wood shall be available to the members in free of cost. Other usufructs like leased out minor forest produce, Kendu leaves etc. can be collected by the members, but these will have to be delivered to the Departmental agency / lease against payment of prescribed wages for the collection and delivery. All intermediate yields in shape of small wood, poles, fire wood etc. as may be obtained in silvicultural operations will be equitable distributed among the members by the executive committee.

11.2.9. Timber and poles as may be obtained from a major harvest or final felling shall be shared between the Forest Department and the Vana Samrakshana Samiti in equal shares. The executive committee on behalf of the Samiti will have the option either to distribute the said 50 percent of the total produce among the members of the Samiti in equal shares or to request the forest Department to dispose of the same and make the net sale-proceeds available for distribution in cash among the members.

11.3. Maintenance of Boundaries and annual inspection programme

11.3.1. Maintenance of Boundaries :

A detailed programme for the clearance of boundaries and repairs to boundary pillars covering all RF, PRF, DPF, PF, Village Forest blocks in Five year cycle has been furnished in Appendix XX (A). This programme has been drawn up as per rule 168 of the Orissa Forest Department Code 1979. The inter Division boundaries are to be cleared annually to a width of 12 meters. The internal boundaries and common boundaries are to be cleared to a width of 8 meters while interior village ring lines to a width of 5 meters. All boundary pillars are to be repaired, numbered and posted in proper places. The missing pillars are to be reposted at their original places. Forest areas adjacent to habitation and subjected to encroachment or susceptible to encroachment in the near

future should be resurveyed as per the official records and the boundary lines of such areas are to be reconstituted with masonry pillars. Depending upon the funds this measure may be extended to other areas too. As an additional measure, the green boundary marks are to be created by planting suitable species.

11.3.2. Inspection programme of boundaries

A detailed boundary inspection programme has been drawn up as per rule 169 of Orissa Forest Department Code 1979 and furnished in Appendix – XX (B). The boundaries are to be inspected thoroughly and defects or anomalies noticed therein are to be rectified promptly. As per the detailed programme drawn in this plan, the Section Forester along with concerned Beat Forest Guard should inspect the entire length of boundaries of the forest blocks within his jurisdiction before 15th April each year and submit the detailed report to the RO by 30th April. Such reports should be comprehensive in nature and should indicate the cases of encroachment, willful removal or destruction of boundary marks and repairs found to be necessary. The Range Officer concerned should verify the report by inspecting at least 50% of the boundaries within his jurisdiction and afterwards should submit the detailed report to the D.F.O. The Divisional Forest Officer or ACF deputed by him should verify the same by inspecting 20% of the boundary lines. The defects noticed and steps taken for rectification should be noted in the compartment history files.

11.3.3. Maintenance of Compartment and Sub-compartment lines

The compartment and sub-compartment lines are to be maintained by renewal of rings at the time of demarcation of coupes.

11.3.4. Cost norm of expenditure for maintenance of boundaries

The norms & expenditure for the maintenance of boundary lines is furnished below in table 11.3.4.1 :-

Table 11.3.4.1- Cost norm & expenditure for maintenance of boundaries				
Sl. No.	Head of expenditure	Inter division boundary (in mandays)	Internal boundary (in mandays)	Common boundary (in mandays)
1	2	3	4	5
1.	Clearance of boundary line	7 per Km.	5.0 per Km.	3.0 per Km.
2.	Repair of stone cairns	2.5 per pillar	2.5 per pillar	-
3.	Construction of stone cairns	5.0 per pillar	5.0 per pillar	-

CHAPTER –12

Regulation of Mining Activities

12.1 Introduction

Some portions of the forests of East Bonai are richly endowed with minerals of economic significance. Out of these, Iron and Manganese are the most important. The most significant Iron Ore deposits are available at Khandadhar, Malongtoli, Dandrah pahar, Basuda, Balia-pahar, Badamgarhpahar, Mitukuda and Rakno in Bonai Range and at Kalta, Daringburu and Barsuan in Koira Range. The Koira Valley is having significant deposits of Manganese Ore, especially near Datimunda, Podadihi, Mlda, Mohulsukha, Sarkunda, Orahuri, Nadidihi, Bhutuda, Ranisal and Nuagaon. The commercial exploitation of these minerals has been undergoing for last 5-6 decades.

These mining operations and the high grade ore extracted therein have contributed significantly towards the industrial development by catering the raw material requirements of Iron & Steel and other important industries. Presently these activities are being strictly monitored as per provisions of various Acts and rules in this regard. This chapter aims to give a brief description of mining leases in the division, and regulation of mining activities being undertaken as per existing Acts and rules.

12.2 Mining Leases

Presently there are 76 No of mining leases under the jurisdiction of Bonai Forest Division. Out of these, 5 No. of leases lie in non-forest land only and the rest 71 leases are having both forest and non-forest land. These mining leases consists of parts of 5 nos. of Reserved Forest Blocks covering an area of 2575.417 .ha., 10 nos of PRF Forest Blocks covering an area of 2512.085 ha. Revenue Forests over 1728.873 ha. and DLC land over 2968.392 ha. The details of RF and PRFs coming within the Mining leases is given in Table 12.2.1.

Table 12.2.1: RFs and PRFs coming within the mining leases.

Sl.	Range	Name of the Forest Block	Extent included in the working circle
1	2	3	7
1	Koira/Barsuan	Toda RF	2138.532
2	Koira	Karo RF	87.983
3	Barsuan	Khandadhar RF	252.714
4	Koira	Kathmal RF	92.113
5	Koira	Bhabanipahar RF	4.075
6	Barsuan/Koira	Bhabanipahar PRF	93.922
7	Koira	Mendhamaruni PRF-I	23.290
8	Barsuan	Sarkunda PRF	587.559
9	Koira	Khajurdihi PRF	813.064
10	Kuliposh/ Barsuan	Khandadhar PRF	69.026
11	Tamra	Gurundia PRF	66.734
12	Kuliposh/ Barsuan	Nagaria PRF	570.380
13	Koira	Kathamal PRF	96.977
14	Barsuan	Toda PRF-IV	19.798
15	Koira	Gonua PRF	171.335
		Total:-	5087.502

- Details of Mining Leases and Forest areas diverted is given in **Appendix-VII**
- Details of Revenue Forests and DLC lands coming within mining leases have appended as **Appendix VII (a) & VII (b)**
- Project wise detailed list of Forest land diverted during previous Working Plan has given in **Appendix VII(d).**

12.3 Blocks & Compartments:

Details of blocks & compartments of various RF and PRF blocks which are part of various mining leases are as follows vide table 12.3.

Table 12.3 : Blocks and compartments coming within the Mining Lease areas			
Sl No.	Forest Block	Compartments	Area(ha)
1	Toda RF	T-1 part, T-2(B) part, T-51-A part, T-51(B) part, T-50(B) part, T-49(B), T-4 part, T-48 part, T-45(B) part, T-44(B) part, T-43(B) part, T-42(B), T-42(A) part, T-41(A) part, T-41(B), T-39(B) part, T-40(B) part, T-28(B), T-28(A) part, T-29(B) part, T-25(c) part, T-25(B) part, T-27, T-26(B) part, T-3, T-26(B) Part	2138.532
2	Khandadhar RF	Part	252.714
3	Bhabanipahar RF	Part	4.075
4	Karo RF	K-1 part, K-4(bal) part, K-3 Part, K-3(bal) Part	87.983
5	Kathmal RF	Km-1 part	92.113
6	Khandadhar PRF	Part	69.026
7	Sarkunda PRF	S-PRF-11(A) part, S-PRF-11(B) part, S-PRF-10 part, S-PRF-12(B) part, S-PRF-9 part, S-PRF-13(B) part, S-PRF-1 part, S-PRF-2 part, S-PRF-8(c) Part	587.559
8	Nagaria PRF	N-3(B) bal, N-3(A) part, N-4(B), N-4(A) part, N-5(B), N-5(A) part, N-6(B) part	570.380
9	Mendhamaruni PRF-I	Part	23.290
10	Mendhamaruni PRF-II	Part	
11	Khajurdihi PRF	KH-PRF-2(B) Part, KH-PRF-1(A) Part, KH-PRF-1(B) Part, KH-PRF-3(B) Part, KH-PRF-4(B) Part, KH-PRF-7(A) Part, KH-PRF-7(B) Part, KH-PRF-8(B) Part, KH-PRF-8(B) bal-Part, KH-PRF-6(B) Part, KH-PRF-6(A) Part	813.064

12	Kathmal PRF	Part	92.113
13	Gonua PRF	Part	171.335
14	Bhabanipahar PRF	Part	93.922
15	Toda PRF IV	Part	19.798
16	Gurundia PRF	Part	66.734

12.4 Mining Operations –An analysis of positive & negative impacts : Exploitation of surface and underground minerals is an essential aspect with respect to industrial economy. The mineral ores extracted through mining operations serve as input in the heavy industries like Iron & Steel Plant, Aluminum Plant , Thermal Power Plant etc. Thus, the mining activities cater to the needs of heavy base industries which are so vital for infrastructural and other related developments. Their contribution in the development of state and national economy cannot be denied. Mining operations also improve to certain extent the Socio-economic status of local area by generating the employment opportunities and by improving the infrastructural facilities like road, electricity, School, Hospital etc. But at the same time, the mining activities cause a great damage to the forest and environment. The mining and allied activity lead to destruction of flora & fauna, top fertile soil and is responsible for air, water and soil pollution and as consequence it ultimately disturbs the delicate ecological balance.

12.4.1 Negative impacts of Mining:

(i) Mining operation involves extensive as well as intensive surface and underground excavation. It also involves dumping of huge amount of waste materials. A good portion of the forest land is also utilized for construction of roads, building, tailing point and for storage of minerals. All these activities cause drastic change in the natural topography and landscape. This not only leads to aesthetic impairment but also affects adversely the natural eco-system.

(ii) In the natural process, it takes hundreds of years for the formation of top fertile soil horizon. However, the top fertile soil cover is lost forever once the mining excavation begins. Once the top soil cover is lost then the excavated forest area

becomes absolutely barren and cannot be re-vegetated and restored to its original status in the natural process for a long time. Even for raising man made vegetation in such areas, intensive measures and huge amount of expenditure are required. The top soil is also getting lost in the process of dumping and waste materials, construction of roads, buildings and other infrastructure required for carrying out mining activities.

(iii) Deforestation cannot be avoided while carrying out mining operation in the forest area, Moreover, deforestation becomes a necessity for the establishment of various installations relating to mining. The mining leasing out areas in this division are mostly located in the interior forest areas and are bearing luxuriant Sal forest. Because of the continuous mining operation over the last few decades, a good portion of such magnificent Sal forest have already been lost in the leased out areas. The mining operation not only destroys the natural flora in the excavated area but also affects adversely the growth of forest vegetation in the adjoining area as it alters the hydrography of the region and cause deposition of silt of unfertile soil over large areas. The mining operations invariably lead to the development of human settlement in the surrounding areas. Most of the people living in such habitations are usually engaged in mining activities . They are dependent on the forest for meeting their fuel wood and small timber requirements. Some of the inhabitants get involved in illicit felling of trees and trade. This also causes the depletion and destruction of adjoining for vegetation.

(iv) Loss of flora in the mining areas leads automatically to the loss of fauna. Mining excavation and allied activities cause the removal of surface vegetation which in turn leads to the loss of wildlife habitat of various important wild species. The noise caused by blasting operation and by crushers, power generators, dozers, dumpers etc. used in the mining operations not only disturb severely the tranquility of sites but also of the adjoining areas. This ultimately results in shrinkage of wilderness over large areas around the mining sites and cause migration and dislocation of wildfauna. The increasing human interference in such areas also leads to poaching of wild animals.

(v) Drilling, blasting and heavy use of machineries based on internal combustion engines like excavators, dumpers, bulldozers etc. are the essential features of mining activity. The operations carried out in mining area produce, fugitive, dust, fumes, air blast and noise and cause air pollution. Besides these, other essential mining operations

such as ore and waste excavation, crushing and screening of excavated materials, haulage on mine roads and dumping of waste materials generate huge amount of dust resulting in air pollution. The fumes generated in the blasting operations and the exhaust fumes produced from the internal combustion engines used for excavation like dumpers, bulldozers and other heavy machineries release huge amount of noxious gases like SO₂, NO₂ and CO etc. to the surrounding atmosphere and pollute it to a great extent. The air pollution through mining activities as narrated above is maximum in case of open cast mining. There is no underground mining in this division and all the mining operations are being carried out through open cast method.

(vi) A huge amount of waste material is produced in the mining excavation. A good portion of such waste materials consist of loose earth fragments. Some portion of such loose materials is always blown away into the surrounding atmosphere and get settled after some time in the large forest area surrounding the mining sites. During the rainy season such loose waste materials are lying in the mining sites and in the surrounding areas get washed away through surface run off having high turbidity and is transported to nallas and streams flowing through the region. Due to excessive deposition of silt carried from mining areas, the nallas and streams running through the region get choked. This results in over spilling of water to the adjoining areas and ultimately disturbs the natural draining system of the region. Many a time, the rain water flowing through the exposed mine is toxic in nature and mixing of it with the natural drainage results in chemical contamination. The choking of streams, nallas and small rivers and chemical contamination there in affects adversely the aquatic life. It also poses health hazard to the local people who are consuming water from such streams and nallas.

(vii) As stated earlier, mining activity leads to blowing away of huge amount of dust in the atmosphere. Such dust is carried away to long distances by the air and get settled in the form of silt layer in the forest land and surrounding agricultural fields. Silt and other mining waste materials also get spilled over from the choked natural drains and finally get deposited in the forest areas and agricultural fields. Since such silt and other mining waste materials are more or less infertile, they adversely affect the fertility and productivity of forest and agriculture land. This deposition of infertile silt layer in the surrounding lands also checks the porosity of the soil and thus reduces the percolation

of water to lower layers of fertile soil. This drastically reduces the moisture content of the underneath soil and thus ultimately results in low productivity. In the mining sites, the top fertile soil is lost forever and area becomes absolutely barren for all purposes.

(viii) Mining and allied activities generate impulsive sound of very high amplitude. Blasting operations and fixed units like grinding mills, crushers, power generators, Jack hammers and mobile units like dozers, dumpers, shovels & draglines increases the noise level sometimes more than 80 db which is much more than the threshold level of 50 db. This severe noise pollution not only affects adversely the wildlife by disturbing the tranquility of wildlife habitat over a large distance around mining site but also poses great health hazard to the people involved in mining activities and to the local inhabitants living in the surrounding areas. Annoyance, fatigue, deafness, speech impairment, high blood pressure etc. are the common health hazards to the people who are exposed to higher noise levels for longer time in the mining sites and in adjoining areas.

(ix) Mineral exploitation through mining operation is basically the management of natural resources which are concentrated and confined to a very few suitable pockets. Since it is not as wide based as forest or agriculture management so its impact on the socio-economic development of neighboring region is very limited and basically confines only to the people which are directly involved in the mining activities, only to a small extent it leads to the developments of the surrounding areas. Through, the economic level of local inhabitants directly involved in the mining operations gets improved but at the same time it leads to the following adverse effects.

- a. Once the mining operation in particular locality begins, then gradually the local inhabitants ignore the traditional professions like agriculture, horticulture etc. in preference to lucrative short term jobs provided therein. Once the mining operation ceases due to exhaustion of minerals, then the local inhabitants engaged therein becomes jobless and their rehabilitation becomes very difficult.
- b. Loss of forest vegetation as a result of mining activity disturbs the economic growth of the local people to certain extent as they are deprived for forest produce subsequently.

- c. Mining activities bring some modern means of harmful entertainment and finally leads to ignoring the traditional ones which adversely affect the social development.
- d. Increasing human settlement around the mining areas leads to increasing demand of consumable commodities which finally cause prices rise and deteriorate the economic conditions of local people.
- e. Due to steady source of income, the local inhabitants engaged in mining activities get indulged more and more in harmful habits like drinking etc.
- f. Due to air, water, land and noise pollution caused by mining activities, there is deterioration in health condition of local inhabitants.

12.4.2. Positive /Favourable impacts of Mining:

Though, the mining activity is usually confined and concentrated to a very few pockets by the minerals exploited and procured through it are economically very valuable, minerals so procured cater the requirements of heavy based industries. The output like steel, Aluminium, power etc. produced from such industries facilitates the infrastructural development which in turn contribute to over all socio-economic development of state and nation. The mining activity is a great source of revenue to both state and Central Government. The revenue generated through it further facilitates the overall economic and social development. In addition to these benefits, it also brings about the following favourable impact in socioeconomic condition of local inhabitants.

- i. It provides gainful employment to the local inhabitants and raises their income level.
- ii. The development of Small Township or human settlement nearby mining sites is one of the prominent feature associated with the mining activities. This gradually leads to concentration of human population. As a consequence, there is gradual increase in the demand of village products. So in final analysis, it enhances the sale of village products and thus contributes in the growth of rural economy.

- iii. It also encourages the growth of animal husbandry and poultry in the neighboring area due to increased demand. At times, depending upon the type of minerals exploited, it leads to the development of related ancillary and cottage industries in the immediate neighborhood. All these developments contribute in the socio-economic growth of the region.
- iv. It also leads to development of road communication & telecommunication and improves the Hospital, education and recreation facilities in the neighboring region.

12.5 Regulation of Mining Activities: From the above detailed analysis, it is apparent that mining activities have both negative as well as positive aspects. Mining is essential for the overall development of state and national economy and finally of the people. However, when carried out recklessly without giving due importance to the forest and environment conservation, it inflicts severe irreparable damages. Consequently in the long run it may retrograde the overall development of the human society. Hence, it is necessary that mining operations are carried out judiciously giving due importance to the conservation of forest and environment.

12.5.1. Relevant Acts: Relevant Acts governing grant, regulation and monitoring of mining operations from forest and environment point of view are wildlife (Protection) Act, 1972, the Forest Conservation Act, 1980, Orissa Forest Act, 1972, Water (Prevention and Control of pollution) Act, 1974, Air (Prevention and Control of pollution) Act, 1981, the Environment (Pollution) Act, 1986 and the Forest Rights Act, 2006. These Acts and Rules made there under are to be strictly followed by the lessees and any violation of these should be immediately followed by legal action as prescribed therein. Diversion of forest land for non-forestry purposes and leasing out of forest land for developmental purposes are being governed by these Acts and rules made thereunder. Mining leases are being granted and permission for mining within the division area are being strictly regulated according to provisions of the above said Acts and rules and after obtaining necessary statutory clearances.

12.5.2 Compensatory Levies: Developmental projects like mining in forest areas are being governed strictly as per prevailing legal provisions. Accordingly different types of compensatory measures need to be done at project costs and cost in this regard need to be levied. Different types of compensatory levies are as detailed below.

(i) Realization of NPV:

As per decision of the Apex court, the User Agency has to deposit the NPV for the forest area diverted/ to be diverted under F.C. Act,1980.

The amount so realised from the User Agencies have been deposited with CAMPA. The NPV amount will be utilised for developmental works both for forest and wildlife. Works under CAMPA have started from 2009-10 in this Division.

(ii) Realization of cost of implementation of Regional Wildlife Conservation Plan :

The Regional Wildlife Conservation Plan both for Bonai and Keonjhar Forest Division was prepared for 10 years and has already been approved by F&E Department, Government of Odisha. Attempts are under progress to prepare the new comprehensive regional wildlife management plan, to get it approved and to implement works approved under the plan without any delay in future. However cost of implementing works under this plan is being realized from each User Agency as per prevailing rules.

(iii) Realization of cost towards Site Specific Wildlife Conservation Plan:

While according final approval for diversion of forest land for non-forestry purpose under F.C. Act,1980, the Central Government is imposing condition in certain cases for preparation of Site Specific Wildlife Conservation Plan and to implement the same, realising its cost from the User Agency.

(iv) Measures for various compensatory afforestation activities in compliance to directions of MoEF&CC (Compensatory Afforestation areas, Penal Compensatory Afforestation areas, Safety Zone area and 1.5 times of the Safety Zone areas.) : While granting approval under F.C. Act,1980, the Government of India stipulates compensatory plantations and safeguards such as Compensatory Afforestation, Penal Compensatory Afforestation, Safety Zone area Plantation and 1.5 times of the Safety Zone Plantation in lieu of diversion of forest land for mining operation. Necessary

schemes for the purpose are being prepared for each project and being approved by the competent authority. After receipt of funds, works are being undertaken.

(v) Compensatory Afforestation(CA)

In lieu of forest area being diverted, compensatory afforestation is being taken up as per guidelines being issued by MoEF&CC, Government of India. Identified land bank in degraded revenue forest land of Bonai Forest division is furnished below.

1. Tendra village of Bonai Range	32.13 acres
2. Shivnathpur village of Bonai Range	24.20 acres
3. Amrudi village of Kuliposh range	38.75 acres
4. San-bhaliadihi village of Kuliposh Range	5.00 acres
5. Bhaliadihi village of Kuliposh Range	38.54 acres
6. Kuliposh village of Kuliposh Range	44.37 acres
7. Fuljhar village of Kuliposh Range	119.92 acres
8. Tankjoda village of Kuliposh Range	52.05 acres
9. Kurda village of Kuliposh Range	46.95 acres
10. Ulsurei village of Kuliposh	72.35 acres
11. Rayat Satkuta of Tamra Range	16.48 acres
12. Kudamusa of Koira Range	32.14 acres
13. Taldihi of Koira Range	85.45 acres
Total :-	608.33 acres
	or, 246.18 ha.

(vi) Degraded Forest area identified for preparation of land bank for Compensatory Afforestation:

Degraded forest areas have identified in the division towards land bank of CA in lieu of forest areas being diverted, and details are as furnished in **Appendix- VII(g)**.

12.5.3. Rehabilitation measures.

Measures for surveying and assessing Damage, measures for reclamation of mined out/broken areas, measures for demarcation of dumpyards and re-vegetation of dead dumps, measures for identifying and fencing of safety zone, measures for preventing air pollution, measures to prevent soil erosion and water pollution, measures to prevent noise pollution, measures for preservation and re-use of top soil and various administrative measures for proper monitoring are being ensured in this regard.

CHAPTER 13

SCIENCE AND RESEARCH

13.1 At the time of assessment of growth and yield of growing stock, a localized patch need to be considered and all research works need to be focused on that patch to curb the impacts of the above factors. So, for the assessment of growth and yield of growing stock, experimental plots should have been established in the division to study the effect of climatic and edaphic factors on the growth rate of growing stock of the forest.

13.2 At present, no experimental plot or Permanent Sample Plot exists in the Division for ascertaining the growth and yield of Sal and other important species. Systematic study of any species has not so far been made in this Division. Sal is the principal and predominant species in the forests of this Division. Other important species found in this Division are Asan, Piasal, Kurum, Dhaura, Sissoo, Bandan, Gambhar, Halandu, KasiMoi, Simili, etc. In absence of any statistical data in the Division regarding the growth and yield of various species, the following published literature for growth statistics for Sal and other species can be referred and used.

1. Yield and stand table for Sal by A.L.Griffith and BakshiSant Ram (Published as Indian Forest Records(New series) Silvicultural Vol.4A,No.41943.)
2. General volume table for Sal by S.H.Howard (Published as Indian Forest Records(Silvicultural series) Vol.X Part-VI,1924.,No.41943.)
3. Volume and out turn table for Sal by S.H. Howard (Published as Indian Forest Records(Silvicultural series) Vol.XII, Part-I,1924.,No.41925.)
4. General standard and commercial Volume table for Asan by A.L. Griffith and BakshiSant Ram (Published as Indian Forest Records(New series) Silvicultural Vol.A .,No.51947)

5. General volume table for Bija based on data procured from Andra Pradesh, Maharashtra, Orissa & Bihar and (Published as Indian Forest Records(New series) Silvicultural Vol.II.,No.71969.)
6. General standard volume table and commercial volume table based on data from Bihar, Orissa, Maharashtra and Madhya Pradesh by S.N. Dabral ,(Published as Indian Forest Records(New series) Silvicultural Vol.II .,No.51964.)
7. Standard volume table for Moi based on data from Andra Pradesh, Maharashtra, Bihar and U.P. by S.N. Dabral and D.C. Sharma,(Published as Indian Forest Records(New series) Silvicultural Vol.II .,No.71969.)

13.3. All the research papers shown above pertain to the volume table which are antic. These have been used in the preparation of the volume table at the National level based on research data from different localities outside Odisha. As such it is not wise to directly use such data and statistics to calculate the yield of different speices in this division. So it is wise to develop and devise volume and yield tables locally for this Division independently.

13. 4. Preservation Plots

Sufficient No. of preservation plots need to be created and maintained for preserving representative patches of existing forests as far as possible in their present form and preserving such selected patches from all forms of disturbances so as to allow progression towards climax form and to study and correlate vegetation change matrix with the impact of climate variation.

One plot covering 10 ha in RF is suitable for research plot in East Bonai. The plot shall be demarcated for research purposes. Similarly one plot for covering 10 ha in RF is also suitable for research plot in West Bonai.

13. 5. Sample Plots.

Establishment of representative sample plots of all ages, all species in different site qualities need to be planned for more focused research aspects. It is also suggested to have sample plots for study of various NTFPs in the division. Sample plots identified has appended in **Appendix-IV**

13.6.Regeneration Plots:In order to study the regeneration status of important species, regeneration plots need to be established. Data collection on population dynamics of seedlings, saplings and young trees need to be done in these plots. Proper demarcation of the plot, marking seedlings/saplings and monitoring their status periodically, finding out the conditions in which a species regenerates best and creating those conditions etc. need to be studied. Study results need to be incorporated in the implementation of works prescribed under the working plan for forest sustainability. Regeneration survey plots identified in the division areas has furnished in Appendix-IV

13. 7 NTFP Plot: For the assured regeneration of any NTFP species, optimum limit of the harvest should be standardized and safe harvesting protocol need to be developed. For this, proper scientific studies need to be taken up. In Bonai Forest Division, the following plots are proposed to have such studies. These plots shall be visited after a gap of one year to enumerate the number of new recruits and the effect of above removal shall be calculated using standard mathematical formulae.

13.8. Other research and experimental plots:It is proposed to design proper research plots to study status of seed orchards, clonal seed orchards and improved nurseries to generate quality seeds /seedlings and planting stock.

CHAPTER –14

SUMMARY OF PRESCRIPTION

14.1. Summary of main prescriptions of the Working Plan are given under this chapter, working circle wise in a tabular form to act as a ready reckoner for quick reference. The total forest area to be managed in the Division is 137282.602 ha., as per this working plan. A resume of various prescriptions given under various working circles constituted under this plan is furnished in following paras.

14.1.1 Chapter-I (Basis of proposal):-The summary of the chapter ‘Basis of Proposal’ is furnished in table 14.1.1.

Table 14.1.1: Summary of Basis of proposals		
Summary of Basis of Proposal		
Headings	Particulars of prescriptions	Para
General objectives of management	(1) To prevent the further degradation of environment by restricting felling of trees and giving more emphasis on preservation of flora and fauna of these forests. (2) To improve the condition, composition and productivity of the existing forests by further enriching the standing crop through scientific management. (3) To increase productivity of forests ecosystem and maintain the vitality. (4) To rehabilitate the depleted forest through artificial regeneration and tending of the existing vegetation (5) To rehabilitate the barren, degraded and depleted forest areas and mining degraded areas through artificial regeneration and by adopting various soil	1.1

	conservation measures. (6) To reduce soil erosion, enhance fertility of Soil and ensure the stability of forest ecosystem. (7) To conserve and improve the existing vegetative-cover for soil and water conservation with a view to ensure ecological and environmental stability. (8) To conserve water sources, enhance water conservation capacity of forest ecosystem and assist in regulating the flow of water in its catchment. (9) To construct water harvesting structures, checkdams, plug gullies and protect river banks, nala banks on either side. (10) To protect and manage wildlife resources with a view to conserve and enrich bio-diversity. (11) To conserve genetic resources and maintain their sustainable use. (12) To assess the biodiversity of forest periodically and improve the Important Value Index of species. (13) To ensure enforcement of various acts and rules existing to protect biodiversity (14) To reduce emissions from deforestation and forest degradation (15) To enhance Carbon Sequestration in forest by following most desirable level of biomass production and find ways for adoption with change in climate (16) To manage and improve forests outside recorded forest areas. (17) To endeavor to meet the requirements of people for agricultural small timbers, firewood, bamboos and other forest produces. (18) To promote development of sustainable and non-	

	destructive livelihood opportunities for local communities (19)To promote Joint Forest Management involving Vana Samrakhyana Samitis for sustainable management of forests. (20)To ensure sustainable production of Non-Timber Forest Produce and thus enhance livelihood opportunities of the communities dependent on forests. (21)To meet needs and requirements related to forest produce of local people and local communities living in and around forest areas. (22)To enhance their livelihood, ensure usufruct benefit sharing and protect their traditional knowledge and traditional/cultural practices. (23)To generate employment for local people by involving them in various forestry operations including collection of various Non Timber Forest Produce (NTFP) inducing a sense of belonging for the forest in them. (24)To introduce tools for scientific management of the forests. (25)To take up the infra structure development for integrated development of the Division. (26)To educate people regarding the importance of conservation of nature and natural resources through proper measures. (27)To ensure capacity building of local forest dependent community towards conservation of nature and natural resources.	

Method of treatment to be adopted	It has emphasized to implement all the prescription of different working circle after fulfilling the prime need for protection and improvement of Forests. Adoption of rehabilitation measures supplemented by gap filling plantation, apt practices to ensure sustainable utilization of forest resources(both Timber and NTFPs) Improvement of bamboo forest by adopting Silvicultural operation ,protection and Improvement of Wildlife and its habitat are important among various method of treatments adopted.	1.3
Constitution of Working Circles	In addition to the Selection, Rehabilitation, Plantation and Protection working circles another four overlapping Working Circles have been constituted to deal with protection and management wildlife, sustainable utilization of NTFP resources, Joint Forest Management activities. In total there are 9 working circles. The total area included in this working plan is 141396.149 ha. After deducton of forest areas diverted under FC Act, 1980 and FRA-2006, an extent of 137282.602 h has been taken as management area of the Division, which includes 45 RF (99969.453 ha.), 41 PRF (30720.912 ha.), 25 DPF (5849.793 ha.), 32 Village Forest (166.790 ha.),and 29 PF (575.654 ha.)	1.4

14.1.2. Chapter-II (Selection Working Circle) :- The summary of prescriptions under Selection Working Circle is furnished below in Table 14.1.2.

Table 14.1.2.		
Summary of Selection Working Circle		
Headings	Particulars of prescriptions	Para
General Constitution	Forest blocks and compartments comparatively with high crop density, good stocking, adequate natural regeneration with mature trees and a good number of trees in approach class and all girth classes are included in this Working circle. This Working Circle comprises dry Peninsular Sal forests and Dry mixed deciduous forest, which are un-even, aged with good tree growth. Trees of all age gradations are available in such forests and the density varies from 0.3 to 0.7. Vegetation consists of Sal & its associates.	2.2
General Characteristics of vegetation	Forests allotted to this working circle fall mainly under moist peninsular and dry peninsular Sal forests	2.3
Growing Stock	The total number of established trees in each forest block included in this Working Circle have been estimated in this revision. Based on the sample inventory data, trees numbers in different girth classes such as 30 to 60 cm is 1,49,70,016 numbers, 60 to 90 cm is 98,88,720 numbers, 90 to 120 cm is 58,74,445 numbers, 120 to 150 cm is 2265585, and 150 cm above is 1668460 numbers.	2.3

Felling Series	The total area has been divided in to 20 felling series namely Amrudhi, Lunga, Dandpat, Nagaria, Ulsura, Jada, Kunjar, Majurdima, Raipiri, Sirigida, Karo, Khajurdihi, Rakshi, Sarkunda, Sarkunda (PRF), Tensa, Toda, Dhenkiam, Rushimath and Kusumdihi. Further each felling series has been divided into 10 equi-productive coupes.	2.4
Blocks, Compartments	386 compartments from 61 blocks have included in this working circle.	2.5
Special objective of Management	(e) To improve the density and composition of forest crop as well as stand structure by suitable silvicultural measures. (f) To remove matured and silviculturally available trees before they become unsound. (g) To carry out silvicultural operations to create conducive situation for better growth of existing crop and natural regeneration. (h) To maintain and improve biodiversity of forest blocks	2.6
Analysis and valuation of crop	The average density of crop varies from 0.3 to 0.7. The entire forest area of the Division was stratified on the basis of the Forest type layer. Stand and stock tables prepared for all blocks. Percentage of Sal in blocks varies from 31.64 to 49.66 % in these blocks.	2.6.1
Silvicultural System	The Selection- cum- Improvement system will be adopted with emphasis on sustainable production and stability of the ecosystem. The crop and soil condition will be improved by selective opening up of the canopy. Conservative felling or no felling will be prescribed in eroded and steep hill slopes, blank areas and along nallah banks.	2.6.2
Choice of species	All species such as Principal, Secondary, Guest and	2.6.2.1

	Inferior will be given equal importance for conservation of species biodiversity and development of forests. The fruit bearing and important NTFP species will be retained.			
Rotation Period	Rotation of Sal varies from 120 to 150 years in Bonai Forest Division depending upon the Site Quality.			2.6.3
Harvestable diameters	Exploitable girth has fixed in various blocks for different species as follows.			2.6.4
	Blocks		Species	
			g.b.h. in cm	
	1.	Lunga, Raipiri, Karo, Toda, Khajurdihi PRF, Sarkunda, Sarkunda PRF	Sal	
	2.	Balai, Kantamunda, Kunjar, Solguda, Kello-A, Khajurdihi RF, Kusumdihi	Sal	
	3.	All other Blocks	Sal	
	1.	Kantamunda, Solguda, Kello-A, Karo, Toda, Khajurdihi PRF, Sarkunda	Bija	
	2.	Dandpat, Ulsura, Nagaria, Jada, Kunjar, Solguda, Balia, Mahurdima, Raipiri, Khajurdihi, Dhenkiam, Rushimath, Kusumdihi	Bija	
	3.	All other Blocks	Bija	
	1.	Raipiri RF	Mundi	
	2.	Lunga, Nagaria, Jada, Balai, Kantamunda,	Mundi	

		Sirigida, Toda, Sarkunda, Gurundia			
	3.	All other Blocks	Mundi	120 cms.	
	1.	Lunga, Toda, Dhenkiam	Assan	150 cms.	
	2.	Nagaria, Balai, Jada, Kantamunda, Solguda, Balial, Kello-A	Assan	135 cms.	
	3.	All other Blocks	Assan	120 cms.	
	1.	Solguda & Kunjar	Bandhan	105 cms.	
	2.	All other Blocks	Bandhan	120 cms.	
	1.	Kantamunda, Raipiri, Toda, Khajurdihi	Karam	150 cms	
	2.	Balai, Kunjar, Mahuldihi, Karo, Khajurdihi, Sarkunda, Kusumdihi, Rushimath, Gurundia	Karam	135 cms.	
	3.	All other Blocks	Karam	120 cms.	
	1.	Balia	Sisoo	105 cms	
	2.	Rakshi-I	Sisoo	135 cms	
	3.	All other Blocks	Sisoo	120 cms	
	1.	All Blocks	Other species	120 cms	
Felling Cycle	Felling Cycle has been fixed at 10 years, which synchronizes with Plan period.				2.6.6
Calculation of Yield	The yield will be regulated by area with a percentage check on the removal of the exploitable trees as calculated in Smythie's safe guarding formula. Yield has calculated for different forest blocks, no of trees which can be felled from each forest blocks has provided.				2.6.7

Table of Felling	Each felling series divided into 10 annual coupes so that the entire area is covered during Plan period. The work will commence from 2021-22 from coupe No. 1 and will continue serially in subsequent years according to the table of felling.	2.6.8
Method of executing felling.	Demarcation of annual coupes will be done during the preceding year in winter season by a Forest Officer not below the rank of trained Forester and checked by Range Officer and Assistant Conservator of Forest.	2.6.9
Marking Rules	Marking shall be done after demarcation of the coupe in the year preceding the year in which it is due for working. All trees to be marked for felling shall be given two blazes approximately of size 15 cm x 15 cm, one at the breast height and the other as close to the ground as possible and marked with a departmental hammer and numbered serially and duly entered in the marking register. The blazes should be located in the sides opposites to each other. Detailed guidelines for marking has provided.	2.6.9.2
Execution of Felling	Felling should be done through OFDC Ltd. The execution of all coupe works shall be done within the period starting from 1 st October to 30 th June. All marked trees shall be cut very close to the ground so that the stump height should not be more than 20 cm. The tree shall be cut and converted to logs with the help of saw. At the time of felling, retaining crops and established seedlings should not be damaged. All converted timber and firewood in the coupe shall be lifted within the time limit. Under unavoidable circumstances the Divisional Forest Officer or the Regional Chief Conservator of Forests, Rourkela Circle may extend the time to minimum days as per provision in the OFD Code.	2.6.9.4

Subsidiary Silvicultural Operation	Cleaning and thinning shall be done in the year following the main felling to be removed. All high stumps should be cut flush to ground. Recruit, whippy and woody seedling needs special care for its establishment in the felling area. Cleaning and thinning are prescribed.	2.6.10
Regeneration	Pockets with poor regeneration to be restocked through ANR using indigenous species. The areas which are infested with invasive weeds like Eupatorium, Lantana spp.,etc are to be identified and after completion of coupe working, these weeds are to be eradicated by uprooting before they get flowered.	2.6.11
Other Regulations	The coupe shall be closed to grazing for a period of 05 years after the main felling. The remaining area is open to grazing subject to the provision of the Odisha Forest (Grazing of Cattle) Rules 1980. Lopping is discouraged. Any regulation for lopping is not prescribed. All working coupes shall be rigidly protected from forest fire for a minimum period of 5 years after the main felling. Climber cutting shall be done at the time of marking of the annual coupe. Soil and water conservation measure shall be done. Construction of check dams in steep slopes, digging of trench is totally discouraged. Plantation in the areas which are having poor regeneration or no regeneration are to be re-stocked by planting of indigenous species on the gaps and tending the existing crops through A.N.R. after completion of coupe working. Depending on the site quality, suitable fodder species for the wild animals shall be chosen by the Divisional Forest Officer.	2.6.12

14.1.3. Chapter- 3 (Protection Working Circle):- The summary of the prescriptions under Protection Working Circle is furnished in table 14.1.3.

Table 14.1.3		
Summary of Protection Working Circle		
Heading	Prescription	Para
General constitution	An area of 7558.700 ha. (computed area) has been allotted to this Working Circle. This working circle includes the forest areas which could not be allotted to any other working circle owing to their special nature, requiring very specific silvicultural treatment or administrative measures, such as ecologically fragile areas covering entire Khandadhar R.F., areas under active encroachment for cultivation and habitation purposes, areas subjected to shifting cultivation in the recent past or currently under this practice and areas which have already been deforested for the purpose of resettlement of the displaced people but yet to be dis-reserved. A total of 16 nos. of forest blocks covering an area of 7558.700 ha. have been allotted to Protection Working Circle	3.2
General character of vegetation	Sal ascends to the top of the hills, either pre dominantly or mixed with its other associates like Bija, Asan, Bandhan, Kurum, Kasi, Bamboo, Dhaura, Jamu, Mai, Amba, Anla, Bahada, Kasi etc. Areas under active encroachment are devoid of vegetation. Regular biotic interference has led to decrease in vegetative cover. Majority of the forest blocks included have are the ones which have been badly affected due to regular removal of biomass.	3.3

Protection Series	For implementation of prescriptions of the Protection Working Circle, six nos of Protection Series have been formed taking the Forest Blocks, Compartments, Sub-Compartments allotted to this Working Circle.	3.4
Areas allotted to Protection Series	An area of 7558.700 ha. (Computed area) has been allotted to this Working Circle. The WC extended over 12 numbers of RFs & 04 PRF (7558.700 ha.)	3.5
Blocks and Compartments	66 compartments of 16 forest blocks have included in this working circle.	3.6
Special objectives of management	(1) To prevent further degradation by maintaining adequate vegetation cover. (2) To rehabilitate the forest area subjected to encroachment & shifting cultivation (3) To protect these forests from illicit removal of biomass fire & grazing by providing strict vigil & (4) To maintain the boundary of the forest blocks regularly with proper posting of pillars.	3.7
Analysis of Crop	In the Forest Blocks coming under Protection Working Circle, Sal is the dominant species. Due to biotic interference and poor edaphic condition, crop density is less than 0.4. Regeneration status is poor to no regeneration.	3.7.1
Silvicultural system	Since forest areas included in this Working Circle need to be protected and restocked, the silvicultural system prescribed is Protection with rehabilitation measures	3.7.2

Protection cycle	For silvicultural treatment of the forest areas, protection cycle of 10 years has been prescribed. Routine forestry operations like maintenance of boundaries, deployment of anti-smuggling squads, prevention and protection of fire by deploying Fire Fighting squad have been given priority.	3.7.3
Annual protection series	In order to execute the protection measures, the areas have been divided into 6 (six) annual protection series to execute all activities by dividing into 10 (ten) annual Coupes.	3.7.4
Method of executing the protection	Area allotted to this Working Circle consists of relatively small isolated patches, annual coupes shall be demarcated in the year due for operation. Signboards will be displayed on prominent and easily identifiable trees. The DFO shall ensure preparation of annual Action Plan before execution of work.	3.7.5
Associated regulations and measures	Demarcation of annual coupes and preparation of Annual Action Plan, General measures of forest protection, Soil and Moisture Conservation measures, measures for improvement of Communication, and fire protection measures have prescribed.	3.7.6
Other regulations	Measures to check encroachment of forest area and Podu cultivation, Catchment area treatment measures and measures to improve people participation in forest protection has prescribed under this heading.	

14.1. 4. Chapter- 4 - (Rehabilitation Working Circle):- The summary of the prescriptions under Rehabilitation Working Circle is furnished below in table 14.1.4.

Table No.14.1.4		
Summary of Rehabilitation Working Circle		
Heading	Prescription	Para
General constitution	Forest blocks over an area of 20325.275 ha (computed area) which are in various stages of degradation are allotted to this Working Circle. In these areas, silviculturally exploitable trees are not fit for felling. Proper protection of the area could not be ensured for which the existing crops and the site condition have deteriorated further and the rate of soil erosion has accelerated.	4.2
General Characteristics of Vegetation	It consists mostly of hardy species. The soil is highly eroded and susceptible to sheet and gully erosion. The area is dominated by miscellaneous vegetation like Asan, Rohini, Karda, Amla, Jamu, Kurei, Dhaura etc. It conforms to Northern Dry Deciduous Forest and Dry Peninsular Sal Forest. The crop density is less than 0.4.	4.3
Constitution of Rehabilitation Series	A total 20325.275 Ha. Area has included in this working circle. To implement various prescriptions of the Rehabilitation Working Circle, 16 nos. Treatment Series have been constituted.	4.4

Blocks, Compartments	The area extends over 20325.275 Ha, which covers 5 RF blocks, 16 PRF blocks and 25 DPF blocks.	4.5
Special Objectives of Management	i. To enrich the micro-edaphic conditions and ensure maximum conservation of soil and water through proper soil conservation measures and through involvement of local people. ii. To tend and improve the existing growing stock through suitable silvicultural measures. iii. To boost growth of Sal and other valuable species of coppice origin adopting appropriate silvicultural operation. iv. To enhance soil productivity through soil and moisture conservation measures. v. To improve the condition of existing forests through protection against grazing, fire and illicit felling. vi. To provide adequate protection to the areas having rootstock and constitute JFM committee to involve the local people. vii. To meet the bona fide needs of local inhabitants like fire wood, small timber, fodder, NTFP, etc. in future when restocked.	4.6

Analysis of the Crop	Due to severe biotic interference in the form of illicit felling, over grazing, fire hazards, shifting cultivation, and illegal mining activities Forest blocks under this circle are in various stages of degradation. The existing forest vegetation in the circle is of poor quality, stunted type of growth and is of irregular form, age, and diameter class-wise on distribution point of view. The crop density generally is less than 0.4.	4.6.1
Silvicultural System	The Silvicultural System prescribed is "Rehabilitation with Assisted Natural Regeneration."	4.6.2
Harvestable Diameter	Since areas are to be protected and rehabilitated, no trees shall be harvested except dead, dying, diseased trees. Hence, no harvestable diameter is prescribed.	4.6.3
Rehabilitation Cycle	As per Para 05 of the Working Plan Code and for complete execution of work in each rehabilitation series, a rehabilitation cycle of 10 year has been fixed.	4.6.4
Annual Rehabilitation Coupes of Rehabilitation Series:-	A total of 20325.275 Ha. is to be rehabilitated within the Plan period covering 5 RF blocks of 3547.309 ha., 16 PRF blocks of 10928.173 ha. & 25 DPF blocks of 5849.793 ha. and will be treated during the Plan period by constituting 16 Nos. of Treatment Series.	4.6.5

Method of Execution of Rehabilitation Operation	For ensuring timely field operations, the annual rehabilitation areas are to be delineated in the map and demarcated in the field in the year preceding the year in which it is due for working. Various areas included under this working circle are in different stages of degradation and require different type of site specific treatments. While preparing treatment map, broadly following types of areas are to be distinguished:- Type-A :- Areas previously worked under coppice system requiring singling-out of coppice shoot, pruning climber cutting, removal of high stumps and other tending operations. Type-B:- Areas having Sal or Bamboo rooted waste unable to establish due to grazing, fire and repeated hacking. Type-C :- Hill slopes, bereft of vegetation or with scanty forest growth, requiring immediate soil conservation and afforestation measures. Type-D:- Areas which had been subjected to shifting cultivation in the past having bushy and scrubby type of growth or weedy growth requiring soil conservation as well as afforestation measures. The next step is to prepare cost estimate by the Range Officer for various suggested rehabilitation measures. As per the degree of degradation, various rehabilitation areas will require different types of area specific treatments. As per the degree of degradation, various rehabilitation areas will require different types of area	4.6.6

	specific treatments. For that purpose, area specific rehabilitation measures are suggested. Vegetative Fencing, Trench Fencing and Stone wall fencing have suggested for fencing the rehabilitating area. Regeneration of indigenous species through ANR has prescribed in the area for regenerarion.	
Associated Regulation and Measures	Control of grazing and fire protection measures have prescribed.	4.6.7

14.1. 5. Chapter- 5- (Plantation Working Circle) :- The summary of the prescriptions for Plantation Working Circle is furnished in table 14.1.5.

Table 14.1.5		
Summary of Plantation Working Circle		
Heading	Prescription	Para
General constitution	Plantation Working Circle covers an area of 3839.840 ha. (1779.888 ha. under Plantation series + 2059.952 ha. under Tending series). It includes all planting area of this Division from 1961-62 to 2020-21& compensatory afforestation areas declared as Protected Forests u/s 33 of OFA Act, 1972 and 32 Nos. of Village Forests (166.790 ha.). It also covers the forest areas having permanent blank & barren lands suitable for block plantation.	5.2
General character of vegetation	Forests are open scrubby and Misc. in composition. The plantation areas if tended & protected have the potentiality to restock and to improve the forests. The density varies from 0.2 to 0.4. Degraded forest areas with permanent gaps are to be restocked with indigenous species.	5.3
Blocks and Compartments	65 numbers of compartments belonging to 56 blocks have included in this working circle.	5.4

Special objectives of management	(1) To improve the condition of existing plantation areas through suitable silvicultural measures. (2) To regenerate the barren & blank areas by suitable indigenous species. (3) To restock the portion of forest blocks coming under shifting cultivation areas of the past. (4) To increase continuous inspection and protection against grazing, Fire & illicit felling. (5) To enhance soil productivity through soil & moisture conservation. (6) To involve local people in protection of forests by constituting VSS.	5.5
Analysis of Crop	The Forest vegetation in small RF blocks around Bonaigarh has been depleted to great extent. The vegetation in other areas are of Misc. type. The planted species in these blocks are mainly Teak, Sisoo, Gambhar, Cassia, Acasia, Cashewnut, Assan, Bamboo, Karanj, Tendra, Neem etc.	5.5.1
Silvicultural System	No silvicultural system is prescribed. Pure Block plantation through artificial regeneration will be done in the blank patches with minimum 4 Ha.	5.5.2
Planting Cycle	Planting cycle of 10 years is prescribed to be synchronized with the Plan period.	5.5.3
Plantation treatment series	This Working Circle constituted with 03 numbers of planting series such as Mahulpada, Dharanidharpali & Mendhamaruni.	5.5.4
Annual coupes of planting and tending	Each Planting & Tending Series has been divided in to 10 annual coupes to cover the area of the series in the Plan period.	5.5.6
Method of execution of Planting and tending	Prescriptions given in the Orissa Plantation Mannual, 1977 and other executive instructions, in force, shall be followed meticulously in addition to the guidelines, furnished vide item 5.6.5.1 of Chpater-5 of Part-II of the revised Working Plan.	5.6
Other regulations	The plantation areas shall be closed to grazing and protected from fire with the help of squad and VSS members.	5.7

14.1.6 Chapter-VI (Bamboo Overlapping Working Circle) :- The summary of the prescriptions under Bamboo Overlapping Working Circle is furnished in table 14.1.6.

Table 14.1.6.		
Summary of Bamboo (overlapping) Working Circle		
Headings	Particular	Para
General constitution	An area of 65.082.505 ha. (Computed area) has been allotted to this Working Circle. The bamboo bearing areas of the Selection Working Circle and Rehabilitation Working Circle have been brought under this Bamboo (OL) Working Circle. Areas allotted to Bamboo (OL) Working Circle in the previous Working Plan are again brought under this Working (Overlapping) Circle in the present Plan	6.2
General character of vegetation	Bamboos are mostly confined to West Bonai and is practically absent in East Bonai. Three species of Bamboo viz. Salia Bamboo (<i>Dendrocalamus strictus</i>), Daba Bamboo (<i>Bambusa arundinacea</i>) & Dungi Bamboo (<i>Cephalostachium p-ergracile</i>) are available in this Division. Salia bamboos occurs over extensive areas in substantial quantities. The entire areas are of Treatment Type – ‘B’ & ‘C’. The Forest type in which Bamboo occurs are Dry Peninsular Sal, Northern dry mixed deciduous Sal & Dry Bamboo brakes. Most of the clumps on an average do not contain minimum number of culms.	6.3

Cutting series	This Working Circle constituted with 09 numbers of cutting series such as Mahulpada, Ulsura, Kantamunda, Kello, Kunjar, Sirigida, Dhenkiam, Kusumdihi& Rushimath.	6.4
Blocks, Compartments	The area extends over 26 forest blocks, such as 19 numbers of RF and 07 number of PRF blocks.	6.5
Special objectives of management	(1)To ensure systematic management of the bamboo forests to obtain sustained yield along with treatment through intensive SSO works, fire protection works, and soil and moisture conservation works (2)To meet the demand of the local people and artisans from the depots of the Orissa Forest Development Corporation. (3)To meet the demand of raw materials for the paper mills. (4)To ensure employment to forest dwellers and local people. (5)To apply proper silvicultural principles while working bamboo forests in order to secure sustained yield along with improvement of quality and quantity of bamboo clumps. (6)To rehabilitate the degraded bamboo areas through tending, cleaning and bamboo planting, etc.	6.6

Analysis of crop	In the Forest Block of Budapahad RF, Lunga RF, Mohulpada RF, Sinduria RF, Ulsura RF, Balai RF, Balia RF, Kantamunda RF, Kunjar RF, Majurdima RF, Raipiri RF, SirigidaRF, Suluguda RF, Sirigida PRF, Gurundia RF and Gurundia PRF, the growth and availability of Salia bamboo is quite good and most of the clumps in these blocks confirms to Quality-II. In the forest blocks of, Jada RF, Kantamunda (I) (Part-I) PRF, Suluguda PRF, DhenkiamRF, Rushimath RF, the growth of Salia bamboo is of medium type confirming to quality-III. Salia bamboo is the main species that occurs over the entire area allotted to this Working Circle except for the moist localities along the perennial nals where daba bamboo grows. General observation and enumeration results indicate poor availability of commercially exploitable bamboos in majority of forest blocks, However, after extrapolation of data in the enumerated blocks, growing stock has estimated and it come to 54703 sale units.	6.6.1
Silvicultural system	The silvicultural system adopted for working of bamboos will be Culms Selection-cum-Clump Improvement	6.6.2
Cutting Cycle	The cutting cycle of four years (A, B, C, D) as was done in the previousPlan is prescribed	6.6.3

Calculation of Yield	Yield will be regulated entirely by area. For calculating the yield the bamboo cutting rules communicated vide letter No.13/FCWP/OS-Gen dt.24.12.90 of the MoEF, Govt. of India shall be followed. As per the said rules, culms up to one year of age (Karadi) and the bamboo culms over one year but less than two years of age (Kasi) will not be cut under any circumstance. . In addition, the minimum culms per clump to be retained after felling shall not be less than 20 culms for clump quality-I, 15 culms for clump quality-2. The Cutting series wise future annual outturn is expected to be variable as annual production of culms varies with the rainfall, past working, illicit removal of Kardi, flowering of clumps, incidence of fire and other factors. The work for assessing the outturn for each annual coupe should start by June-July and to be completed by August for the coupe due for working so that new Karadies are taken into account.	6.6.4.
Sequence of Cutting Series	09 numbers of cutting series with annual coupe details have provided in table 6.6.5.1.	6.6.5
Method of execution of cutting operation	All annual coupes will be demarcated and inspected during the end of preceding year in which the coupe is due for working. The coupe number shall be shown in the displayed signboard of the compartment. The State Government decides the agency for working of bamboo, as it is a nationalized forest produce. At present the Orissa Forest Development Corporation Ltd. is the agent of Government to work out bamboo coupes through the Raw Material Procurer (RMP) on their behalf.	6.6.6

	Having completed the demarcation of bamboo coupes and before taking it up for working, a Treatment map will be prepared by the Agency for working on a copy of the management map in 1: 50,000 scale indicating salia and daba bamboo areas respectively. Salia bamboo forest will be categorized for different treatment as described below. <u>Treatment type 'A'</u> Area with healthy and well stocked bamboo clumps consisting of <table> <tr> <td>Clump quality - I</td><td>Where</td><td>culm</td></tr> <tr> <td colspan="3">height of bamboos is 9 meters and above</td></tr> <tr> <td>Clump quality - II</td><td>Where</td><td>culm</td></tr> <tr> <td colspan="3">height of bamboo is between 6 to 9 meters</td></tr> <tr> <td>Clump quality - III</td><td>Where</td><td>culm</td></tr> <tr> <td colspan="3">height of bamboos is below 6 meters</td></tr> </table> <u>Treatment type 'B'</u> Areas with well stocked but degraded, damaged, congested and / or fire burnt clumps. <u>Treatment Type 'C'</u> Areas where in bamboo clumps are sparse and scattered. If necessary the treatment Type B & C may be further classified into the above three clump quality classes if good growth is there. Bamboo cutting rules in general have specified in para 6.6.6.4 of the chapter. Rules applicable to specific treatment types have provided in Para 6.6.6.5 of the chapter Distinguishing Morphological Characters of TheCulms of Different Age has provided in table 6.6.6. of the chapter.	Clump quality - I	Where	culm	height of bamboos is 9 meters and above			Clump quality - II	Where	culm	height of bamboo is between 6 to 9 meters			Clump quality - III	Where	culm	height of bamboos is below 6 meters			
Clump quality - I	Where	culm																		
height of bamboos is 9 meters and above																				
Clump quality - II	Where	culm																		
height of bamboo is between 6 to 9 meters																				
Clump quality - III	Where	culm																		
height of bamboos is below 6 meters																				

Simultaneous silvicultural operation	Retaining bamboos need special care for its establishment in the cutting area. It has been prescribed to take up SSO works after the main cutting to help Karadi for its establishment. In the event of such a situation the following prescription are made. (i) Bamboo seedlings at a spacement of about 4m x 4m are to be adopted and retained and the rest are to be thinned out. (ii) Clearing, soil working and weeding are to be done around the adopted bamboo seedlings up to a radius of 50 cm. (iii) To maintain continuity, planting of bamboo rhizomes is also to be resorted to especially in big gaps. (iv) All the flowered clumps are to be worked out as per the prescriptions of the Working Plan. (iv) The area should be closed for grazing. (v) Elaborate fire protection measures are also to be taken. The main identified threats with respect to the management of bamboo forests are: i. Indiscriminate cutting of bamboo by tenants and artisans; ii. Annual forest fire; iii. Excessive grazing and Clear felling of daba bamboo Bambo seedlings and rhizomes are to be planted in Treatment C type areas of Bamboo forests.	6.6.6.7
Other regulation	In the matter of grazing & fire protection, the areas of this Working Circle will be governed by the prescriptions of Selection-cum-Improvement Working Circle with which it overlaps.	6.6.9.

14.1.7. Chapter- 7 - NTFP (Overlapping) Working Circle :- The summary of the prescriptions under Non Timber Forest Produce (Overlapping) Working Circle is furnished in table 14.1.7.

Table 14.1.7		
Summary of Non Timber Forest Produce (Overlapping) Working Circle		
Heading	Prescription	Para
General constitution	An area of 137282.602 ha of (computed) area has been allotted to this overlapping Working Circle. This Working Circle overlaps all the main Working Circle. Forests of Bonai Division contain a large number of species, which yield a variety of non-timber forest products (NTFP). People living in and around the forests depend on these NTFPs as a crucial component of their livelihood security. The people usually collect these products for their own consumption as well as for sale to add to their earnings. The rural people of the Division depend on these resources as one a major source of income generation.	7.2
General character of vegetation	As this Working Circle overlaps the entire forest area of the Division, the characteristics of vegetation is same as that described in Chapter-2 & all other Working Circles.	7.3
Collection Series	Most of the NTFPs are harvested annually and area spread over throughout the forests of Bonai Division. Hence, no collection series has been formed. Annually NTFPs are to be collected from the total area of the forests without damaging the species.	7.4

Blocks and Compartment:	As this is an Overlapping Working Circle, this Working Circles covers all the 45 RFs, 41 PRFs, 25 DPFs, 29 PFs and 32 VFs of Bonai Forest Division.	7.5
Special objectives of managements	i. To regulate the collection and extraction of various NTFPs with a view to harvest on sustainable basis. a. To encourage regeneration of NTFP species within forests. b. To improve the quality of NTFPs species within forests. c. To protect the interests of the primary gatherers and promote their livelihood option. d. To optimize collection and extraction of various NTFPs e. To enhance the value of forests by way of developing NTFPs in the forest, creating opportunities for value-addition in existing NTFPs, and strengthening marketing and other local institutions. f. To enhance the stakes of local people in NTFPs and to extend skills to local people for sustainable collection, extraction and utilization of various NTFPs. g. To encourage greater financial and managerial inputs in forests to promote regeneration of valuable and desirable NTFPs and to enhance productivity of forests. h. To involve VSS members in NTFP extraction, value addition, disposal and marketing. i. To study the potentiality of NTFP items including medicinal plants	7.6

Analysis and valuation of crop	Systematic study has not been done in the past in this Division to assess the potential production of various NTFPs and to ascertain impact of collection of such NTFPs on sustainability of the forest. An attempt was made and NTFP survey was carried out in all Ranges of the Division during 2011-12 and 2012-13 under 13 th FC Grant and result furnished vide Part-I of the Plan. Other details have been furnished vide Chapter-7 of Part-2.	7.6.1
Calculation of yield	The NTFP survey was carried out in all Ranges of this Division during 2011-12 and 2012-13 under 13 th F.C. Grant and the result of out-turn of NTFP both tree and shrub species based on its value are furnished table 7.6.4	7.6.4
Method of collection	The primary collectors should be properly guided and trained to collect the NTFPs in non-destructive way. Latest techniques of collection, drying and storage should be imparted to them. Value addition to collected NTFPs will increase their earning. The method and agencies of harvesting of some of the important NTFP items has furnished in para 7.6.5	7.6.5
Calender of Collection of NTFPs	Calendar of collection of various NTFPs have provided in table 7.6.6	7.6.6
Regeneration	Inclusion of NTFP yielding species in plantation programmes have suggested.	7.6.7

Associated Regulations and Measures	Measures to check forest fire, protection from grazing, protection from lopping and illicit felling have suggested. Improving the market linkage and ensure fair prices for various NTFPs have suggested. It has suggested to control the collection of NTFP within the limit of carrying capacity. It has also suggested regulating the rights and concession of the forest dependent community as per existing rules.	7.6.8

14.1.8. Chapter- 8 (JFM Overlapping Working Circle):- The summary of the prescription under JFM Overlapping Working Circle is furnished in table 14.1.8.

Table 14.1.8		
Summary of JFM (Overlapping) Working Circle		
Heading	Prescription	Para
General constitution	There are 299 VSSs in the Division protecting 13,649.518 ha. of forest. Out of these forest patches, 9680.34 ha are parts of various revenue forests within the jurisdiction of the division. The rest 13969.178 ha area overlaps with this working plan area. Therefore, 13969.178 ha. have been allotted to this overlapping Working Circle. Further, the VFs area of 32 blocks covering an area of 166.790 ha. has also been included in the Overlapping Working Circle. Thus, the total area comes to 14135.968 ha. The area allotted to this Working Circle will remain dynamic and is likely to increase as more and more degraded forest is allotted to these VSSs. It is overlapping Selection, Protection, Plantation and Rehabilitation Working Circle. One of the remarkable features of the	8.2

	National Forest Policy, 1988 was that it prescribed for active involvement of the people in protection, conservation and management of the forests.	
General character of vegetation	Different type of degraded forests are allotted to the Joint Forest Management (Over lapping) Working Circle. Most of the degraded forests allotted to this Working Circle over laps with Selection Working Circle & Rehabilitation Working Circle and hence, the characteristics of vegetation are same as described under the Chapter Rehabilitation Working Circle & Selection Working Circle.	8.3
Special objectives of management	(1)To involve local communities in forest and natural resource management. (2) To make the people and Forest Department equal partners in management. (3) To protect the degraded forests from biotic interference.(4) To restock the barren and blank areas through artificial regeneration. (5)To increase the productivity of soil through suitable soil and moisture conservation activities.(6)To encourage people for rational utilization of their own community resources for the betterment of the community.(7)To involve people in NTFP collection and trade as mandated in FRA, 2006.(8) To create income generation activities in the villages protecting the forests.	8.4

Analysis of Crop	The growing stock per hectare in these blocks is relatively poor since the forest crop is largely degraded with shrubby growth. All these blocks have potential for rapid improvement since they have rooted waste, coppice shoots and pole crop. Degradation of these forests have taken place due to heavy biotic pressure on these forests. Already signs of improvement is being seen as a result of proper implementation of JFM activities in many JFM areas in the recent years.	8.5
Silvicultural System	No conventional silvicultural system is prescribed for Joint Forest Management (Overlapping) Working Circle. Moreover, the system of working in these particular areas would be guided by the Micro Plans prepared in conformity with the prescriptions of the main Working Circle, jointly by the DFO and VSS for the individual VSS allotted areas.	8.6
Demarcation of VSS areas	Demarcation of VSS area helps to resolve tenurial conflict between villages and gives the VSS members a sense of ownership and specific identity which eventually motivates them to protect the forest and helps for the better management.	8.7.1
Micro Plan preparation	The Micro plans should be prepared for each VSS irrespective of whether money for implementation is available or not. Planning should be done first and efforts should be made to obtain funds from different sources like State Budget, District Budget, DRDA, and MGNREGA grants and any other sources. Micro Plan shall be prepared for every VSS adopting the 'Participatory Rural Appraisal' technique (PRA). Before the preparation of Micro Plan, the forest assigned to	8.7.2 to 8.7.4

	the VSS shall be surveyed and demarcated. Pillars should be posted to avoid any future area dispute among different Samities.	
Community mobilization/ improving motivation level of people	It is important that the motivation level of the people to protect the forests should be sustained for a long period for the forest to respond to the protection provided. The gestation period for the forest to provide returns is quite long. During which period there may be conflicts amongst groups of people or stakeholders. Hence, it is advisable to identify genuine NGOs or eminent local persons who are closely associated with the people, who can convince the people and keep up their motivation level and enthusiasm.	8.7.6
Silvicultural System	Restoration of degraded forest areas will be given importance in the micro plan. Under no circumstances, the Micro Plan prescriptions shall be beyond the Working Plan prescription & hence, no separate silvicultural system needs to be prescribed under this Chapter.	8.7.4 to 8.7.5
Entry Point activities, Income Generation Activities,	In each village, efforts should be made to create sustainable income generating activities which may be forest product based. Income generating activities (IGA) like sericulture, pisciculture, vermiculture, lakh, and honey collection could be encouraged through VSSs. Entry point activities done in different programmes should aim at sustainable income generation to the villages. NGOs specialising in IGA and SHG and marketing should be entrusted with promotion of livelihood amongst the members of the VSS. These NGOs could impart vocational training on sustainable livelihood and value addition for different NTFP items.	8.7.7
Other regulations	All the areas assigned to the VSS should be marked on the Topo sheets of 1:50,000. The works taken up in the VSS areas should be entered in the Compartment Histories.	8.7.8

14.1.9. Chapter-9 (Wildlife Overlapping Working Circle) :- The summary of the prescriptions under Wildlife Overlapping Working Circle is furnished in table 14.1.9.

Table 14.1.9		
Summary of Wild Life (Over lapping) Working Circle		
Heading	Summary of prescriptions	Para.
1	2	3
General constitution and area covered.	This W.C. overlaps with the entire areas of Selection W.C., Rehabilitation W.C., Plantation W.C. and Protection W.C. The total area of this W.C. is 137282.602 Ha.	9.2
Special Objectives of Management	(1)To protect the existing wildlife habitat through proper protection measures.(2)To provide improved habitat for multiplication of wildlife.(3)To promote wildlife in general and endangered in particular.(4)To check negative interactions at Human-wildlife interface through proper mitigation measures. (5)To create awareness among people regarding the importance of conservation of wildlife and its habitat. (6)To plan and execute ecotourism and ecodevelopment activities to promote people's concern on biodiversity conservation.(7)To prevent wildlife crimes and to take stringent actions against the offenders by following existing rules and regulations.	9.3
Present status and distribution of wildlife.	Wildlife, their Status, distribution, habitats, Habitat quality, quantity and key areas in the division has already discussed in the Chapter 3 of Part-I.	9.4
Key issues and challenges	A detailed discussion on the key issues and gaps identified in the field of wildlife conservation in the division has already done in the Chapter 3 of Part I.	9.5

Strategies to be adopted	Provision of sufficient number of Protection Squads to assist the staff in protection activities, improving the protection network of the division by increasing the number of camping locations and by improving the facilities in the existing camping locations, proper maintenance of Boundary lines to be effected, protected area coverage to suitable areas, ensure proper amenities and working conditions to the staff, ensure proper co-ordination with other line departments like Roads, Railways etc., proper monitoring of protection activities through registers, reports and modern tools, inter division co-ordination to check offences in the boundary areas, preparation of crime dossiers, sharing of information between the divisions at landscape level, mitigating man-wildlife conflict, proper watch on habitual offenders, ensuring proper participation of local people through proper eco development activities, special strategies to meet Monsoon and Fire season, proper communication strategy by good network of wireless stations and mobile stations.etc. are proposed strategies to be adopted to protect and manage wildlife and its habitat	9.6
Protection and enforcement	Engaging Protection Squad, Improving the network of Camping locations, Field patrolling covering all vulnerable areas, Division Level mobile squad, Strengthening of communication network, Boundary Maintenance, Protected Area Coverage, Annual maintenance of Roads, Provision of Vehicles for movement of staff, Improvement in Intelligence gathering network, Insurance coverage for Protection Staff, Strengthening of Staff amenities, Co-ordination with neighbouring divisions, Co-ordination with line departments, Capacity Building of staff, Use of modern tools / software/imageries, and Protection from Grazing are various activities proposed for strengthening protection and enforcement activities.	9.7.1

Forest Fire Prevention and Reclamation	Preparation of Fire Protection and reclamation plan , ensuring preparedness of staff through proper training programmes/ briefing sessions, tracing fire lines in areas prone to fire, Engagement of necessary number of number of fire fighting squads, Provision of necessary number of fire fighting equipments,ensure proper mobility of the staff in the field, establishment of temporary camps, proper involvement of VSSs, public awareness measures, proper detection & response strategy, analysis of fire burnt areas and proper reclamation measures are various activities proposed.	9.7.2
Wildlife Monitoring	Establishment of wildlife monitoring cell, Maintaining daily patrolling logs/registers at beat level, Population estimation programmes at division level, Recording data from PIPs, Camera trapping, Monitoring of Birds, Vegetation Survey, Use of GIS/GPS tools, Procurement of necessary equipments, and Wild life health monitoring have prescribed to improve wildlife monitoring in the division.	9.7.3
Habitat mangement	Measures for Improving Food Availability, Measures for improving water availability	9.7.4
Measures for Improving Food Availability	Protection of representative forest patches with palatable food of wildlife, Development of meadows, Eradication of invasive species, Assisting regeneration of Bamboo and other fruit bearing species, Maintenance of Saltlicks and Silvicultural measures have prescribed as measures to improve food availability to wildlife.	9.7.4
Measures for improving water availability	Creation of new water bodies and renovation of existing water bodies, Soil and Moisture Conservation Measures, and measures to ensure water availability to wildlife during peak summer have prescribed.	9.7.4
Measures for improving cover	To improve the availability of shelter to different animals very selective removal of mature trees without creating a lasting gap in canopy in the areas under selection working circle has to be prescribed. The measures like improving the density of forest and its composition, loose piling up of debris, no felling of trees within radius of 50 meters along nalla, water holes, wallows saltlicks and core habitat of wild animals etc.	9.7.4

	have also been prescribed for improving the cover for different wild species. Measures should also be taken for improving the proportion of Sal and other semi-ever green species. The pure plantations are to be avoided and in the mixed plantation, ground flora and middle storey is to be developed and maintained.	
Measures for Improving Wilderness	Monitoring and mapping of wildlife potential areas and reduce biotic interference over these areas, reduce the pressure over forests out of grazing by domestic live stock, regulation of mining activities, and measures against illicit felling, poaching & forest fire have prescribed.	9.7.4
Maintaining special habitats	Special habitats of wildlife such as snags, snag recruits, large old trees, Trees with fluting boles and buttresses and holes at the base, Lianas and tangled climbers, Fruit bearing trees and shrubs to be protected through proper measures.	9.7.4
Protection of wetlands	Wetlands present in the division area need to be identified and inventorized. Proper studies regarding the biodiversity of these wetlands need to be conducted. Various threats to the existence of these wetlands need to be studied and sufficient measures need to be taken to conserve these natural wetlands. Awareness among people need to be brought to conserve wetlands. Necessary people orientation and participation in this direction need to be ensured.	9.7.4
Mitigation of Human-Wildlife Conflict and Protection of Wildlife Corridors	Identified conflict areas have listed in para 9.8.5.2. Railway lines, High ways and electric lines passing through the division area creates disturbances in continuity of elephant movement. In Koiria and Barsuan range areas mining operations also creates discontinuity in movement of elephants.	9.7.5
Measures to mitigate Human-Wildlife Conflict & protect wildlife Corridors:	Traditional measures to drive away elephants such as beating drums, etc, Rectification of sagging of electrical lines, construction of watch towers , provision of elephant squads, improving the early warning system, provide physical barriers, crop rotation, vegetative barriers, sensitization of villagers, Installation of solar	9.7.5

	street lights in conflict areas, capacity building training for staff and villagers, providing barricading to open wells, and insurance coverage to paddy fields , payment of timely compassionate amount, application of Modern toolsetc are measures suggested to mitigate human –wildlife conflict in the division area.	
Wildlife Rescue and rehabilitation	Constitution of one wildlife rescue team , procurement of sufficient quantity of rescue cages and equipments, procurement of rescue vans/vehicles, procurement of tranquilization equipments and drugs, specialized Training of staff in rescue and rehabilitation of wildlife, and outsourcing of trained licensed persons in rescue and rehabilitation of snakes under the monitoring of forest department staff have prescribed.	9.7.6
Ecotourism, Interpretation and Conservation Education	Khandadhar water fall & surroundings, Tensa, Rukuda Dam surroundings and various Water fall locations in Bonai Forest Division have identified as potential ecotourism locations in the division. Community managed sustainable nature tourism activities have suggested. Day tour facilities and nature camps have porposed. Also measues to ensure public awareness on forests&wildlie conservation, interpretation facilities, etc. have given importantce. It has also proposed to implement ecotourism facilities in accoridance with existing acts, rules and regulations in this regard. Community managed sustainable nature tourism measures have suggested.	9.7.7
Ecodevelopment activities	High dependency on forests for firewood, fodder, bamboo and timber collection, lack of alternate employment opportunities among the forest dependent community, uncontrolled cattle grazing in forest areas, low agricultural productivity in some pockets, lack of effective community institutions, man-animal conflict, unsustainable NTFP collection, poverty and poor health conditions of the local community , inadequate number of staff and lack of training among the staff are issues to be addressed through eco development activities. Measures have suggested in this regard.	9.7.8

Research, Monitoring and Training	To carry out research activities, collaboration with other reputed institutions is proposed. Division level research works after getting approval from necessary authority have also suggested. Some proposed topics for research works are have also provided. Analysis of wildlife monitoring results at frequent intervals with the help of reputed institutions, regular Review meetings at the level of Divisional Forest Officer and Range Officers to assess the effectiveness of various interventions, interactive sessions with local community , annual third party evaluation with the help of reputed educational institutions/NGOs, to study the effectiveness of various activities have suggested as monitoring measures. Apart from the regular trainings, refresher trainings in important topics have proposed. Also training in reputed institutions like Wildlife Institute of India for officers at the level of Range Officers have also been suggested. Exposure visits to various wildlife important areas within and outside the state have also prescribed. Some selected topics for training have also listed.	9.7.9
Implementation of SSWLCP & Regional WL Management Plan.	SSWLCP & Regional Wildlife Management Plan need to executed as approved by PCCF(WL) & CWLW, Odisha.	9.7.10

CHAPTER 15

TREES OUTSIDE FORESTS.

15.1 Introduction:

All trees make a contribution to the environment and to the social and economic well-being of humankind. Though efforts are being taken up in all working plans to plan and implement activities aiming protection and management of tree cover within defined forest areas, “Trees outside Forests” is almost a neglected category. This chapter briefly describes the present scenario of TOF in Bonai Forest division, potential areas in this regard to aim development, efforts required to increase TOF so as to make forests sustainable and rural economy more revitalized.

Trees outside forests refer to trees on land not defined as forests and other wooded land. This may include trees in cities, on farms, along roads and in many other locations which are by definition not a forest. A comprehensive global assessment of ToF has not ever been carried out. However, many studies have been made of ToF for specific countries or land areas, often with an emphasis on their economic contributions. The significance of trees outside the forest (ToF) can be observed in several contexts. In countries with low forest cover, ToF resources constitute the main source of wood and non-wood Forest products, even though trees may be so scattered that the maps produced by FRA 2000 indicate that no forests exist. Trees are found on agricultural lands, in densely populated areas, in fruit-tree plantations and in home gardens, which often cover a large proportion of the land. In urban areas trees provide important aesthetic and environmental services in addition to providing shade and greatly increasing the liveability of cities. Communities, farmers and herders who do not have access to forests diversify their production and protect their land by maintaining various tree systems on their farms.

15.2 Importance of protection and development of ToF:

Trees outside the forests relieve the pressure on forest resources, conserve farmland, boost agricultural productivity, blunt the harmful impact of urban growth on the environment, increase food supplies, provide income and in general make valuable contributions to food security. Growing populations, shrinking forests and degraded ecosystems all suggest that trees outside the forest are destined to play a larger local and global role in meeting the challenges of resource sustainability, poverty reduction and food security. Important functions of TOF can be summarized as follows.

- i. It can serve as food security to rural community.
- ii. It serves for shade and shelter, soil protection and improvement of the landscape and rural environment as their main reasons for growing trees
- iii. Livestock fodder produced by ToF can reduce the extent of deforestation out of livestock grazing in forest area.
- iv. Trees outside the forest are an important source of non-wood forest produces.
- v. Trees outside the forest have an important ecological role. Planted trees and shrubs in fields help to check runoff and erosion and control flooding, as well as helping to purify water and protect against wind. Trees lining rivers and streams help to maintain biodiversity, providing spawning beds for fish and shellfish and shade which reduces eutrophication.
- vi. The unique role of trees in soil protection and conservation, checking wind and water erosion and maintaining soil fertility is universally acknowledged. Also important are the cumulative benefits of trees on smallholdings to soil and water conservation, in particular in the larger context of mountain watershed management; their positive impact on climate; and their role in buffering the effects of desertification and drought.

Trees outside the forest are increasingly recognized by policy-makers, planners and managers as an essential component of sustainable development. This

ancient resource has been part of the daily context and culture of rural populations and in many cases ToF resources are critical to food security. However, much work and discussion will be needed before trees growing in non-forest areas can be considered an integral part of planning and development policies.

15.3 Present Scenario of ToF in Bonai Forest Division.

Trees outside the forest are defined by default, as all trees excluded from the definition of forest and other wooded lands. In Bonai Forest Division, trees outside the forests are located mostly on farmlands and built-up areas, both in rural and semi-urban areas. A large number of ToF consist of planted or domesticated trees. TOF include trees in agroforestry systems, orchards and small woodlots. They also grow in agricultural fields, pastoral areas and on farms, or along rivers, canals and roadsides, or in gardens and parks. Some of the land use systems include alley cropping and shifting cultivation, permanent tree cover crops, windbreaks, hedgerows, home gardens and fruit-tree plantations. Avenue Plantations, Canal side Plantations and Tree side plantations raised in recent years also constitute a good percentage of tree cover outside forests.

15.4 Plantations outside recorded Forest areas:-

In order to improve tree cover outside recorded forest areas, avenue/roadside plantations are being raised. Also seedlings are being raised and distributed to public for planting in their own lands. List of plantations raised outside recorded forest areas during the last plan period is furnished in **Table 15.4.**

Table 15.4.- Plantations outside recorded Forest area

Range	Year of Plantation	Scheme	Component	Ha./No.	Name of Site	Status	Species	No. of Species	Survival %
Bonai	1982-83	Dev. of MFP	ANR	2.05	Pithacore KF	KF	Mixed	615	28
Bonai	1984-85	RLEGP Plantation	ANR	20	Kasada KF	KF	Mixed	6000	55
Koira	1984-85	RLEGP Plantation	ANR	20	Kulkuta KF	KF	Mixed	6000	48
Bonai	1985-86	ITDA Fuel wood Reserve	ANR	3	Ulsurei KF	KF	Mixed	900	37
Koira	1985-86	NREDF- DRDA	ANR	60	Ranisal KF	KF	Mixed	18000	35
Bonai	1986-87	NREP-RDF Plantation	ANR	40	Kusumnali KF	KF	Mixed	12000	37
Koira	1986-87	Ecological promotion (SAIL) RDF	ANR	20	NF	NF	Mixed	6000	30
Koira	1987-88	Ecological Promotion (SAIL)	ANR	15	NF	NF	Mixed	4500	37
Koira	1987-88	Ecological Promotion (SAIL)	ANR	6	NF	NF	Mixed	1800	29
Koira	1987-88	Ecological Promotion (SAIL)	ANR	80	NF	NF	Mixed	24000	45
Koira	1987-88	Ecological Promotion (SAIL)	ANR	10	NF	NF	Mixed	3000	41
Koira	1987-88	Ecological Promotion (SAIL)	ANR	15	NF	NF	Mixed	4500	42
Bonai	1989-90	Shifting cultivation control programme	ANR	50	Patamunda KF	KF	Mixed	15000	34
Bonai	1989-90	Shifting cultivation control programme	ANR	50	Fuljhar KF	KF	Mixed	15000	30
Bonai	1989-90	Shifting cultivation control programme	ANR	50	Badjala KF	KF	Mixed	15000	37
Bonai	1990-91	Shifting cultivation control programme	ANR	50	Badjala KF	KF	Mixed	15000	37
Bonai	1990-91	Shifting cultivation control programme	ANR	50	Fuljhar KF	KF	Mixed	15000	27
Bonai	1990-91	Shifting cultivation control programme	ANR	50	Patamunda KF	KF	Mixed	15000	31
Bonai	1991-92	Bamboo Plantation	Bamboo	4	Kurdapali KF	KF	Bamboo	1600	25
Bonai	1991-92	Bamboo Plantation	Bamboo	10	Kantasara KF	KF	Bamboo	4000	45
Bonai	1991-92	Bamboo Plantation	Bamboo	8	Sangogua KF	KF	Bamboo	3200	36
Bonai	1991-92	Bamboo Plantation	Bamboo	10	Mahuldiha KF	KF	Bamboo	4000	55
Bonai	1991-92	Bamboo Plantation	Bamboo	7	Satkuta KF	KF	Bamboo	2800	38
Bonai	1991-92	Bamboo Plantation	Bamboo	8	Thakurpali KF	KF	Bamboo	3200	25
Bonai	1994-95	DRDA- EAS	Bamboo	65	Derula KF	KF	Bamboo	26000	53

Bonai	1994-95	DRDA- EAS	Bamboo	25	Tantabahal KF	KF	Bamboo	10000	52
Koira	1994-95	DRDA- EAS	Bamboo	25	Damalu KF	KF	Bamboo	10000	40
Koira	1994-95	DRDA- EAS	Bamboo	25	Mendhamaruni KF	KF	Bamboo	10000	45
Sole	1994-95	DRDA- EAS	Bamboo	50	Sole KF	KF	Bamboo	20000	48
Koira	1995-96	IJRY Scheme DRDA	AR	80	Mendhamaruni KF	KF	Mixed	128000	28
Barsuan	1995-96	IJRY Scheme DRDA	AR	50	Barsuan KF	KF	Mixed	80000	35
Koira	1995-96	IJRY Scheme DRDA	ANR	5	Sanpatuli KF	KF	Mixed	1500	33
Tamra	1995-96	IJRY Scheme DRDA	ANR	50	Tamra KF	KF	Mixed	15000	37
Tamra	1995-96	IJRY Scheme DRDA	ANR	10	Bhurung KF	KF	Mixed	3000	54
Bonai	1995-96	RDF Plantation through VSS- Talbahali VSS	ANR	10	Ghungur KF	KF	Mixed	3000	55
Bonai	1995-96	Tantabahal VSS	ANR	7	Tantabahal KF	KF	Mixed	2100	36
Bonai	1995-96	Balitikudar	ANR	10	Balitikudar KF	KF	Mixed	3000	53
Bonai	1995-96	Ruguda VSS	ANR	36	Ruguda KF	KF	Mixed	10800	49
Bonai	1995-96	Bhugula VSS	ANR	12	Babehuli KF	KF	Mixed	3600	28
Bonai	1995-96	San Nuagaon VSS	ANR	5	San Nuagaon KF	KF	Mixed	1500	34
Bonai	1995-96	Mahulata VSS	ANR	5	Mahulata KF	KF	Mixed	1500	32
Bonai	1995-96	Nischintpur VSS	ANR	10	Nischintpur KF	KF	Mixed	3000	41
Bonai	1995-96	Mahuldiha	ANR	9	Mahuldiha KF	KF	Mixed	2700	51
Bonai	1995-96	Kandheiposh	ANR	12	Kandheiposh KF	KF	Mixed	3600	42
Bonai	1995-96	Raikelaposh	ANR	7	Raikelaposh KF	KF	Mixed	2100	35
Bonai	1995-96	Kareiput	ANR	10	Kareiput KF	KF	Mixed	3000	44
Bonai	1995-96	Beldihi	ANR	137	Beldihi-Bijakuli KF	KF	Mixed	41100	43
Koira	1995-96	Jamdihi	ANR	5	Jamdihi KF	KF	Mixed	1500	27
Koira	1995-96	Kamanda	ANR	5	Kamanda KF	KF	Mixed	1500	26
Tamra	1995-96	Khandapat	ANR	4	Khandapat KF	KF	Mixed	1200	44
Tamra	1995-96	Dhatkiposh	ANR	4	Dhatkiposh KF	KF	Mixed	1200	41
Tamra	1995-96	Bhaldunguri	ANR	5	Rajabasa KF	KF	Mixed	1500	52
Tamra	1995-96	Makarchuan	ANR	4	Makarchuan KF	KF	Mixed	1200	48
Koira	1995-96	Ecological Promotion (AR)	NF	6	Tensa	NF	Mixed	9600	37
Bonai	1996-97	State Plan- Microplan	ANR	83.5	Bijadihi KF	KF	Mixed	8350	34
Bonai	1996-97	WFP- Microplan	ANR	24	Nuapali KF	KF	Mixed	7200	43

Koira	1996-97	WFP- Microplan	ANR	12	Soyamba KF	KF	Mixed	3600	33
Bonai	1996-97	WFP- Microplan	ANR	24	Sadhubahal KF	KF	Mixed	7200	31
Koira	1998-99	Compensatory Affn.	ANR	0.7	Patmunda KF	KF	Mixed	210	53
Bonai	2001-2002	Central Plan, NTFP Bamboo Plantation	ANR	35	Kantakudar KF	KF	Bamboo	14000	35
Kuliposh	2001-2002	Central Plan, NTFP Bamboo Plantation	ANR	35	Sadhubahal KF	KF	Bamboo	14000	52
Kuliposh	2001-2002	Central Plan, NTFP Bamboo Plantation	ANR	35	Talbahali KF	KF	Bamboo	14000	45
Kuliposh	2001-2002	Central Plan, NTFP Bamboo Plantation	ANR	35	Amrudihi KF	KF	Bamboo	14000	50
Barsuan	2004-2005	Non-Plan Comp. Affn.	ANR	72	NF	NF	Mixed	14400	27
Barsuan	2004-2005	Non-Plan Comp. Affn.	ANR	13	NF	NF	Mixed	2600	51
Barsuan	2004-2005	Non-Plan Comp. Affn.	ANR	4.936	NF	NF	Mixed	987	49
Koira	2004-2005	Non-Plan Comp. Affn.	ANR	0.33	NF	NF	Mixed	66	49
Koira	2004-2005	Non-Plan Comp. Affn.	ANR	16.21	NF	NF	Mixed	3242	31
Koira	2004-2005	Non-Plan Comp. Affn.	ANR	10.4	Kadadia KF	KF	Mixed	2080	55
Koira	2004-2005	Non-Plan Comp. Affn.	ANR	3	Koira & Kasira KF	KF	Mixed	600	35
Koira	2004-2005	Non-Plan Comp. Affn.	ANR	1.47	NF	NF	Mixed	294	26
Koira	2004-2005	Non-Plan Comp. Affn.	ANR	1.545	NF	NF	Mixed	309	52
Bonai	2004-2005	National Affn. Programme	ANR	22.5	Beldihi KF	KF	Mixed	4500	49
Bonai	2004-2005	National Affn. Programme	AR	2	NF	NF	Mixed	3200	25
Bonai	2004-2005	National Affn. Programme	AR	2	NF	NF	Mixed	3200	45
Bonai	2004-2005	National Affn. Programme	AR	2	Kello KF	KF	Mixed	3200	27
Bonai	2004-2005	National Affn. Programme	ANR	8	Kello KF	KF	Mixed	1600	25
Bonai	2004-2005	National Affn. Programme	AR	5	NF	NF	Mixed	8000	55
Bonai	2004-2005	National Affn. Programme	ANR	15	Sibnathpur KF	KF	Mixed	3000	50
Bonai	2004-2005	National Affn. Programme	AR	2	NF	NF	Mixed	3200	42
Bonai	2004-2005	National Affn. Programme	ANR	20	Jakeikela KF	KF	Mixed	4000	26
Bonai	2004-2005	National Affn. Programme	AR	10	Jakeikela KF	KF	Mixed	16000	52
Bonai	2004-2005	National Affn. Programme	ANR	20	Balitakudar KF	KF	Mixed	4000	41
Bonai	2004-2005	National Affn. Programme	AR	9	Balitakudar KF	KF	Mixed	14400	54
Bonai	2004-2005	National Affn. Programme	ANR	16	Balitakudar KF	KF	Mixed	3200	25
Bonai	2004-2005	National Affn. Programme	AR	10	NF	NF	Mixed	16000	45
Bonai	2004-2005	National Affn. Programme	ANR	20	Kundheiposh KF	KF	Mixed	4000	48

Bonai	2004-2005	National Affn. Programme	AR	8	Kundheiposh KF	KF	Mixed	12800	25
Bonai	2004-2005	National Affn. Programme	ANR	12	Kundheiposh KF	KF	Mixed	2400	52
Bonai	2004-2005	National Affn. Programme	AR	10	NF	NF	Mixed	16000	38
Bonai	2004-2005	National Affn. Programme	ANR	22.5	Kareiput KF	KF	Mixed	4500	27
Bonai	2004-2005	National Affn. Programme	AR	10	Kareiput KF	KF	Mixed	16000	50
Bonai	2004-2005	National Affn. Programme	ANR	20	Kareiput KF	KF	Mixed	4000	48
Bonai	2004-2005	National Affn. Programme	AR	10	NF	NF	Mixed	16000	34
Bonai	2004-2005	National Affn. Programme	AR	4	NF	NF	Mixed	6400	27
Bonai	2004-2005	National Affn. Programme	ANR	50	Barghat KF	KF	Mixed	10000	44
Bonai	2004-2005	National Affn. Programme	ANR	30	Barghat KF	KF	Mixed	6000	35
Tamra	2004-2005	National Affn. Programme	ANR	20	Khandapat KF	KF	Mixed	4000	53
Tamra	2004-2005	National Affn. Programme	AR	10	NF	NF	Mixed	16000	35
Tamra	2004-2005	National Affn. Programme	ANR	37.5	Sisoodihi KF	KF	Mixed	7500	32
Tamra	2004-2005	National Affn. Programme	ANR	25	Sisoodihi KF	KF	Mixed	5000	34
Kuliposh	2004-2005	National Affn. Programme	ANR	20	Bandhberna KF	KF	Mixed	4000	32
Kuliposh	2004-2005	National Affn. Programme	ANR	12	Bandhberna KF	KF	Mixed	2400	39
Kuliposh	2004-2005	National Affn. Programme	AR	4	NF	NF	Mixed	6400	50
Kuliposh	2004-2005	National Affn. Programme	ANR	35	Bichhanapati KF	KF	Mixed	7000	25
Kuliposh	2004-2005	National Affn. Programme	AR	10	Bichhanapati KF	KF	Mixed	16000	38
Kuliposh	2004-2005	National Affn. Programme	ANR	18	Bichhanapati KF	KF	Mixed	3600	30
Kuliposh	2004-2005	National Affn. Programme	ANR	10	Haldikudar KF	KF	Mixed	2000	43
Kuliposh	2004-2005	National Affn. Programme	ANR	10	Haldikudar KF	KF	Mixed	2000	44
Kuliposh	2004-2005	National Affn. Programme	AR	4	NF	NF	Mixed	6400	38
Kuliposh	2004-2005	National Affn. Programme	ANR	50	Talbahali KF	KF	Mixed	10000	27
Kuliposh	2004-2005	National Affn. Programme	ANR	13	Talbahali KF	KF	Mixed	2600	33
Kuliposh	2004-2005	National Affn. Programme	ANR	20	Mahulata KF	KF	Mixed	4000	34
Kuliposh	2004-2005	National Affn. Programme	ANR	20	Mahulata KF	KF	Mixed	4000	47
Kuliposh	2004-2005	National Affn. Programme	AR	10	NF	NF	Mixed	16000	51
Jarda	2005-2006	SGRY (DRDA)	AR	30	Kusumnali KF	KF	Mixed	48000	25
Barsuan	2005-2006	SGRY (DRDA)	AR	20	Raikela KF	KF	Mixed	32000	39
Bonai	2005-2006	National Affn. Programme	ANR	7.5	Beldihi KF	KF	Mixed	3000	47

Bonai	2005-2006	National Affn. Programme	ANR	7.5	Govindpur KF	KF	Mixed	3000	53
Bonai	2005-2006	National Affn. Programme	ANR	7.5	Jharbeda KF	KF	Mixed	3000	51
Bonai	2005-2006	National Affn. Programme	ANR	5	Sibnathpur KF	KF	Mixed	2000	51
Bonai	2005-2006	National Affn. Programme	ANR	7.5	Kareiput KF	KF	Mixed	3000	25
Bonai	2005-2006	National Affn. Programme	ANR	20	Bhanjikusum KF	KF	Mixed	8000	40
Bonai	2005-2006	National Affn. Programme	ANR	20	Bhangdihi KF	KF	Mixed	8000	52
Kuliposh	2005-2006	National Affn. Programme	ANR	52.5	Mahulata KF	KF	Mixed	21000	32
Koira	2006-2007	Compensatory Afforestation	ANR	3.505	NF	NF	Mixed	1402	39
Koira	2006-2007	Compensatory Afforestation	ANR	1.942	NF	NF	Mixed	777	30
Bonai	2007-2008	National Affn. Programme	ANR	30	Badpada KF	KF	Mixed	9000	45
Bonai	2007-2008	National Affn. Programme	ANR	15	Gudhiali KF	KF	Mixed	4500	52
Bonai	2007-2008	National Affn. Programme	ANR	50	Kasada KF	KF	Mixed	15000	28
Bonai	2007-2008	National Affn. Programme	ANR	20	Lenjadihi KF	KF	Mixed	6000	33
Bonai	2007-2008	National Affn. Programme	ANR	40	Nuapali KF	KF	Mixed	12000	41
Bonai	2007-2008	National Affn. Programme	ANR	20	Khajuribahal KF	KF	Mixed	6000	36
Bonai	2007-2008	National Affn. Programme	ANR	20	Ghansyampur KF	KF	Mixed	6000	51
Kuliposh	2007-2008	National Affn. Programme	ANR	30	Rengali KF	KF	Mixed	9000	39
Kuliposh	2007-2008	National Affn. Programme	ANR	30	San-Kudheikela KF	KF	Mixed	9000	51
Kuliposh	2007-2008	National Affn. Programme	ANR	40	Mahuldiha KF	KF	Mixed	12000	36
Kuliposh	2007-2008	National Affn. Programme	ANR	20	Jinkela KF	KF	Mixed	6000	36
Kuliposh	2007-2008	National Affn. Programme	ANR	20	Kantakudar KF	KF	Mixed	6000	41
Kuliposh	2007-2008	National Affn. Programme	ANR	40	Baldihi KF	KF	Mixed	12000	54
Kuliposh	2007-2008	National Affn. Programme	ANR	30	Raikelaposh KF	KF	Mixed	9000	46
Tamra	2007-2008	National Affn. Programme	ANR	30	Dhatkiposh KF	KF	Mixed	9000	54
Tamra	2007-2008	National Affn. Programme	ANR	30	Ghusuriposh KF	KF	Mixed	9000	35
Tamra	2007-2008	National Affn. Programme	ANR	40	Makarchuan KF	KF	Mixed	12000	38
Tamra	2007-2008	National Affn. Programme	ANR	20	Rani-Amrabatipur KF	KF	Mixed	6000	45
Tamra	2007-2008	National Affn. Programme	ANR	25	Kadampur KF	KF	Mixed	7500	26
Tamra	2007-2008	National Affn. Programme	ANR	20	Badgaon KF	KF	Mixed	6000	33
Jarda	2007-2008	National Affn. Programme	ANR	30	Majurdima KF	KF	Mixed	9000	38

Jarda	2007-2008	National Affn. Programme	ANR	30	Kainsibahal KF	KF	Mixed	9000	39
Jarda	2007-2008	National Affn. Programme	ANR	40	Behedamal KF	KF	Mixed	12000	45
Jarda	2007-2008	National Affn. Programme	ANR	50	Niktimal KF	KF	Mixed	15000	39
Jarda	2007-2008	National Affn. Programme	ANR	40	Badibahal KF	KF	Mixed	12000	54
Jarda	2007-2008	National Affn. Programme	ANR	40	Brahamdihi IF	KF	Mixed	12000	41
Sole	2007-2008	National Affn. Programme	ANR	40	Jhaliadihi KF	KF	Mixed	12000	33
Sole	2007-2008	National Affn. Programme	ANR	40	Soleguda KF	KF	Mixed	12000	53
Bonai	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Kantabahl KF	KF	Mixed	12000	40
Koira	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Kanther-Koira KF	KF	Mixed	12000	35
Koira	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Baldihi KF	KF	Mixed	12000	26
Jarda	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Ramchhinda KF	KF	Mixed	12000	50
Tamra	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Madhupur KF	KF	Mixed	12000	25
Barsuan	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Bandhal KF	KF	Mixed	12000	51
Barsuan	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Rengua KF	KF	Mixed	12000	40
Barsuan	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Raikela KF	KF	Mixed	12000	41
Sole	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Fatatanger KF	KF	Mixed	12000	52
Kuliposh	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Sabra KF	KF	Mixed	12000	33
Kuliposh	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Landamunda KF	KF	Mixed	12000	51
Kuliposh	2008-2009	2406-Fry & WL (NP) Support to VSS	ANR	40	Dhanijam KF	KF	Mixed	12000	45
Tamra	2008-2009	Compensatory Afforestation (NP)	AR	1.43	NF	NF	Mixed	2288	31
Barsuan	2008-2009	OFSDP	ANR	40	Fatatangar KF	KF	Mixed	12000	27
Barsuan	2008-2009	OFSDP	AR	10	Fatatangar KF	KF	Mixed	16000	55
Bonai	2008-2009	OFSDP	ANR	40	Niktimal KF	KF	Mixed	12000	39
Bonai	2008-2009	OFSDP	NTFP	10	Niktimal KF	KF	Mixed	4000	54
Bonai	2008-2009	OFSDP	ANR	40	Niktimal KF	KF	Mixed	12000	32
Bonai	2008-2009	OFSDP	NTFP	10	Niktimal KF	KF	Mixed	4000	37
Jarda	2008-2009	OFSDP	ANR	65	Balia KF	KF	Mixed	19500	32
Jarda	2008-2009	OFSDP	ANR	55	Balia KF	KF	Mixed	16500	32
Kuliposh	2008-2009	OFSDP	ANR	65	Fuljhar KF	KF	Mixed	19500	30
Kuliposh	2008-2009	OFSDP	Bamboo	3	Fuljhar KF	KF	Bamboo	1200	47
Kuliposh	2008-2009	OFSDP	NTFP	4	Fuljhar KF	KF	Mixed	1600	25

Kuliposh	2008-2009	OFSDP	ANR	75	Ranja KF	KF	Mixed	22500	30
Kuliposh	2008-2009	OFSDP	Bamboo	5	Ranja KF	KF	Bamboo	2000	53
Kuliposh	2008-2009	OFSDP	NTFP	5	Ranja KF	KF	Mixed	2000	29
Kuliposh	2008-2009	OFSDP	ANR	70	Patamunda KF	KF	Mixed	21000	48
Kuliposh	2008-2009	OFSDP	Bamboo	5	Patamunda KF	KF	Bamboo	2000	28
Kuliposh	2008-2009	OFSDP	NTFP	5	Patamunda KF	KF	Mixed	2000	55
Kuliposh	2008-2009	OFSDP	ANR	55	Fuljhar KF	KF	Mixed	16500	40
Kuliposh	2008-2009	OFSDP	NTFP	5	Fuljhar KF	KF	Mixed	2000	36
Sole	2008-2009	OFSDP	ANR	30	Sole KF	KF	Mixed	9000	55
Sole	2008-2009	OFSDP	Bamboo	10	Sole KF	KF	Bamboo	4000	45
Sole	2008-2009	OFSDP	ANR	40	Tukuda KF	KF	Mixed	12000	42
Sole	2008-2009	OFSDP	Bamboo	5	Tukuda KF	KF	Bamboo	2000	34
Sole	2008-2009	OFSDP	ANR	25	Tukuda KF	KF	Mixed	7500	53
Sole	2008-2009	OFSDP	Bamboo	10	Tukuda KF	KF	Bamboo	4000	45
Tamra	2008-2009	OFSDP	ANR	70	Boneikela KF	KF	Mixed	21000	46
Tamra	2008-2009	OFSDP	Bamboo	20	Boneikela KF	KF	Bamboo	8000	37
Kuliposh	2009-2010	OFSDP	ANR	70	Dalamkucha KF	KF	Mixed	21000	50
Tamra	2009-2010	OFSDP	ANR	60	Tamra KF	KF	Mixed	18000	43
Bonai	2010-2011	CAMPA	AR	40	Tendra KF, Khajuribahal KF	KF	Mixed	64000	27
Bonai	2010-2011	CAMPA	AR	43	Kulkuta MWS- Kulkuta KF	KF	Mixed	68800	47
Bonai	2010-2011	CAMPA	AR	15	Kasda MWS- Kasda KF	KF	Mixed	24000	41
Koira	2010-2011	CAMPA	AR	25	Kasira KF	KF	Mixed	40000	47
Jarda	2010-2011	CAMPA	AR	60	Badibahal KF	KF	Mixed	96000	50
Jarda	2010-2011	CAMPA	AR	20	Brahamindihi KF	KF	Mixed	32000	54
Jarda	2010-2011	CAMPA	AR	20	Majurdima KF	KF	Mixed	32000	40
Jarda	2010-2011	CAMPA	AR	30	Binjhikhol KF	KF	Mixed	48000	39
Tamra	2010-2011	CAMPA	AR	40	Madhupur KF	KF	Mixed	64000	30
Tamra	2010-2011	CAMPA	AR	30	San-Gurundia KF	KF	Mixed	48000	39

Tamra	2010-2011	CAMPA	AR	40	Jamdarh KF	KF	Mixed	64000	52
Barsuan	2010-2011	CAMPA	AR	20	Dengura KF	KF	Mixed	32000	46
Barsuan	2010-2011	CAMPA	AR	30	Kusumdihi KF	KF	Mixed	48000	32
Barsuan	2010-2011	CAMPA	AR	20	Damalu KF	KF	Mixed	32000	45
Kuliposh	2010-2011	CAMPA	AR	60	Landamunda KF	KF	Mixed	96000	55
Kuliposh	2010-2011	CAMPA	AR	80	Dhakamunda KF	KF	Mixed	128000	44
Kuliposh	2010-2011	CAMPA	AR	60	Angul KF	KF	Mixed	96000	35
Bonai	2010-2011	Compensatory Afforestation under CAMPA	ANR	40	Kantabahal KF	KF	Mixed	12000	36
Bonai	2010-2011	Compensatory Afforestation under CAMPA	ANR	40	Keutuniposh KF	KF	Mixed	12000	50
Bonai	2010-2011	Compensatory Afforestation under CAMPA	ANR	40	Danta KF	KF	Mixed	12000	29
Bonai	2010-2011	Compensatory Afforestation under CAMPA	ANR	40	Patrapali KF	KF	Mixed	12000	37
Bonai	2010-2011	Compensatory Afforestation under CAMPA	ANR	40	Katuridhua KF	KF	Mixed	12000	38
Koira	2010-2011	Compensatory Afforestation under CAMPA	ANR	2.48	NF	NF	Mixed	744	32
Koira	2010-2011	Compensatory Afforestation under CAMPA	ANR	6.645	NF	NF	Mixed	1994	50
Koira	2010-2011	Compensatory Afforestation under CAMPA	ANR	4.325	NF	NF	Mixed	1298	33
Koira	2010-2011	Compensatory Afforestation under CAMPA	ANR	1.28	NF	NF	Mixed	384	25
Koira	2010-2011	Compensatory Afforestation under CAMPA	ANR	5.443	Rengalbeda - Nadikasira KF	KF	Mixed	1633	55
Koira	2010-2011	Compensatory Afforestation under CAMPA	AR	0.299	NF	NF	Mixed	478	55
Barsuan	2010-2011	Compensatory Afforestation under CAMPA	AR	2.6	NF	NF	Mixed	4160	28
Barsuan	2010-2011	OFSDP	ANR	48	Nuatantra KF	KF	Mixed	14400	30
Barsuan	2010-2011	OFSDP	AR	2	Nuatantra KF	KF	Mixed	3200	55
Barsuan	2010-2011	OFSDP	Fu. & Fodr	1	Nuatantra KF	KF	Mixed	2500	52
Barsuan	2010-2011	OFSDP	Bamboo	1	Nuatantra KF	KF	Bamboo	400	32
Barsuan	2010-2011	OFSDP	NTFP	12	Nuatantra KF	KF	Mixed	4800	37
Kuliposh	2010-2011	OFSDP	ANR	49	Mukulapani KF	KF	Mixed	14700	43
Kuliposh	2010-2011	OFSDP	AR	4	Mukulapani KF	KF	Mixed	6400	36
Kuliposh	2010-2011	OFSDP	Fu. & Fodr	4	Mukulapani KF	KF	Mixed	10000	33
Kuliposh	2010-2011	OFSDP	Bamboo	3	Mukulapani KF	KF	Bamboo	1200	47
Kuliposh	2010-2011	OFSDP	NTFP	3	Mukulapani KF	KF	Mixed	1200	39
Kuliposh	2010-2011	OFSDP	ANR	49	Haldikudar KF	KF	Mixed	14700	46

Kuliposh	2010-2011	OFSDP	AR	3	Haldikudar KF	KF	Mixed	4800	27
Kuliposh	2010-2011	OFSDP	Fu. & Fodr	3	Haldikudar KF	KF	Mixed	7500	25
Kuliposh	2010-2011	OFSDP	Bamboo	3	Haldikudar KF	KF	Bamboo	1200	49
Kuliposh	2010-2011	OFSDP	NTFP	5	Haldikudar KF	KF	Mixed	2000	46
Kuliposh	2010-2011	OFSDP	ANR	54	Mukulapani KF	KF	Mixed	16200	53
Kuliposh	2010-2011	OFSDP	AR	14	Mukulapani KF	KF	Mixed	22400	32
Kuliposh	2010-2011	OFSDP	NTFP	5	Mukulapani KF	KF	Mixed	2000	42
Kuliposh	2010-2011	OFSDP	ANR	59	Patamunda KF	KF	Mixed	17700	31
Kuliposh	2010-2011	OFSDP	AR	5	Patamunda KF	KF	Mixed	8000	26
Kuliposh	2010-2011	OFSDP	Fu. & Fodr	5	Patamunda KF	KF	Mixed	12500	33
Kuliposh	2010-2011	OFSDP	Bamboo	4	Patamunda KF	KF	Bamboo	1600	29
Kuliposh	2010-2011	OFSDP	NTFP	5	Patamunda KF	KF	Mixed	2000	35
Kuliposh	2010-2011	OFSDP	ANR	36	Phuljhar KF	KF	Mixed	10800	29
Kuliposh	2010-2011	OFSDP	AR	7	Phuljhar KF	KF	Mixed	11200	41
Kuliposh	2010-2011	OFSDP	Fu. & Fodr	4	Phuljhar KF	KF	Mixed	10000	53
Kuliposh	2010-2011	OFSDP	Bamboo	2	Phuljhar KF	KF	Bamboo	800	37
Kuliposh	2010-2011	OFSDP	NTFP	3	Phuljhar KF	KF	Mixed	1200	26
Kuliposh	2010-2011	OFSDP	ANR	44	Kuliposh KF	KF	Mixed	13200	52
Kuliposh	2010-2011	OFSDP	AR	10	Kuliposh KF	KF	Mixed	16000	38
Kuliposh	2010-2011	OFSDP	NTFP	5	Kuliposh KF	KF	Mixed	2000	45
Tamra	2010-2011	OFSDP	ANR	17	Tamra KF	KF	Mixed	5100	52
Tamra	2010-2011	OFSDP	Fu. & Fodr	2	Tamra KF	KF	Mixed	5000	47
Tamra	2010-2011	OFSDP	NTFP	17	Tamra KF	KF	Mixed	6800	53
Tamra	2010-2011	OFSDP	ANR	16	Boneikela KF	KF	Mixed	4800	27
Tamra	2010-2011	OFSDP	Fu. & Fodr	2	Boneikela KF	KF	Mixed	5000	46
Tamra	2010-2011	OFSDP	NTFP	19	Boneikela KF	KF	Mixed	7600	46
Jarda	2010-2011	OFSDP	NTFP	17	Kundheidaha KF	KF	Mixed	6800	39
Jarda	2010-2011	OFSDP	NTFP	13	Kunjaria KF	KF	Mixed	5200	55
Jarda	2010-2011	OFSDP	NTFP	12	Balia KF	KF	Mixed	4800	52
Kuliposh	2010-2011	OFSDP	NTFP	9	Fuljhar KF	KF	Mixed	3600	51
Kuliposh	2010-2011	OFSDP	NTFP	12	Ranja KF	KF	Mixed	4800	46

Kuliposh	2010-2011	OFSDP	NTFP	10	Patamund KF	KF	Mixed	4000	39
Kuliposh	2010-2011	OFSDP	NTFP	12	Badjal KF	KF	Mixed	4800	36
Sole	2010-2011	OFSDP	NTFP	10	Sole KF	KF	Mixed	4000	51
Sole	2010-2011	OFSDP	NTFP	6	Tukuda KF	KF	Mixed	2400	33
Sole	2010-2011	OFSDP	NTFP	8	Tukuda KF	KF	Mixed	3200	33
Kuliposh	2010-2011	OFSDP	NTFP	24	Dalamkucha KF	KF	Mixed	9600	33
Tamra	2010-2011	OFSDP	NTFP	5	Kantapali KF	KF	Mixed	2000	35
Bonai	2011-2012	State Plan 13th FC (Outside Working Plan Area)	AR	10	Tendra KF	KF	Mixed	16000	50
Tamra	2011-2012	State Plan 13th FC (Outside Working Plan Area)	AR	20	Bhaldunguri KF	KF	Mixed	32000	47
Koira	2011-2012	Compensatory Afforestation under CAMPA	ANR	3.9	NF	NF	Mixed	1170	42
Koira	2011-2012	Compensatory Afforestation under CAMPA	AR	0.885	NF	NF	Mixed	1416	52
Koira	2011-2012	Compensatory Afforestation under CAMPA	ANR	9.627	NF	NF	Mixed	2888	47
Koira	2011-2012	Compensatory Afforestation under CAMPA	ANR	0.495	NF	NF	Mixed	149	47
Barsuan	2011-2012	Compensatory Afforestation under CAMPA	AR	3.047	NF	NF	Mixed	4875	33
Barsuan	2011-2012	Compensatory Afforestation under CAMPA	ANR	9.778	NF	NF	Mixed	2933	25
Bonai	2011-2012	OFSDP	ANR	10	Amphali KF	KF	Mixed	3000	28
Bonai	2011-2012	OFSDP	AR	4	Amphali KF	KF	Mixed	6400	47
Bonai	2011-2012	OFSDP	Bamboo	1	Amphali KF	KF	Bamboo	400	52
Bonai	2011-2012	OFSDP	NTFP	10	Amphali KF	KF	Mixed	4000	32
Jarda	2011-2012	OFSDP	ANR	62	Burda KF	KF	Mixed	18600	50
Jarda	2011-2012	OFSDP	NTFP	16	Burda KF	KF	Mixed	6400	48
Tamra	2011-2012	OFSDP	ANR	40	Kanchhinda KF	KF	Mixed	12000	39
Tamra	2011-2012	OFSDP	AR	3	Kanchhinda KF	KF	Mixed	4800	35
Tamra	2011-2012	OFSDP	Fu. & Fodr	2	Kanchhinda KF	KF	Mixed	5000	40
Tamra	2011-2012	OFSDP	NTFP	15	Kanchhinda KF	KF	Mixed	6000	36
Koira	2012-2013	State Plan -13th FC Grant	AR	10	San-Indpur KF	KF	Mixed	16000	48
Tamra	2012-2013	State Plan -13th FC Grant	AR	20	Bhurung KF	KF	Mixed	32000	47
Barsuan	2012-2013	Compensatory Afforestation under CAMPA	AR	3.378	NF	NF	Mixed	5405	34
Koira	2012-2013	Compensatory Afforestation under CAMPA	AR	5.105	NF	NF	Mixed	8168	46

Sole	2012-2013	MGNREGS	AR	10	Mahuldihi KF	KF	Mixed	16000	41
Tamra	2012-2013	MGNREGS	AR	10	Kantapali KF(	KF	Mixed	16000	49
Bonai	2012-2013	MGNREGS	AR	20	Sindurkela KF	KF	Mixed	32000	25
Bonai	2012-2013	MGNREGS	AR	10	Bandhabhuin KF	KF	Mixed	16000	46
Sole	2012-2013	MGNREGS	ANR	30	Nuapali KF	KF	Mixed	9000	26
Tamra	2012-2013	MGNREGS	ANR	100	Matalgarh KF	KF	Mixed	30000	41
Koira	2012-2013	MGNREGS	ANR	80	Sonua KF	KF	Mixed	24000	30
Koira	2012-2013	MGNREGS	ANR	20	Ranisal KF	KF	Mixed	6000	25
Kuliposh	2012-2013	MGNREGS	ANR	50	Rengali KF	KF	Mixed	15000	26
Sole	2012-2013	OFSDP	ANR	15	Brahmanibasa KF	KF	Mixed	4500	37
Sole	2012-2013	OFSDP	Bamboo	5	Brahmanibasa KF	KF	Bamboo	2000	44
Sole	2012-2013	OFSDP	NTFP	15	Brahmanibasa KF	KF	Mixed	6000	36
Jarda	2013-2014	13th FC Grant	AR	30	Ramchhinda KF	KF	Mixed	48000	47
Koira	2013-2014	CAMPA	AR	0.93	NF	NF	Mixed	1488	40
Bonai	2013-2014	MGNREGS	AR	15	Janukhol KF	KF	Mixed	24000	52
Bonai	2013-2014	MGNREGS	AR	25	Bhadimara KF	KF	Mixed	40000	54
Bonai	2013-2014	MGNREGS	AR	60	Balitakudar KF	KF	Mixed	96000	48
Kuliposh	2013-2014	MGNREGS	AR	30	Kantakudar KF	KF	Mixed	48000	33
Kuliposh	2013-2014	MGNREGS	AR	10	Jodibahal KF	KF	Mixed	16000	47
Kuliposh	2013-2014	MGNREGS	AR	10	Ladapani KF	KF	Mixed	16000	41
Kuliposh	2013-2014	MGNREGS	AR	30	Ruguda KF	KF	Mixed	48000	44
Kuliposh	2013-2014	MGNREGS	AR	20	Deoposh KF	KF	Mixed	32000	51
Kuliposh	2013-2014	MGNREGS	AR	20	Dhakamunda KF	KF	Mixed	32000	54
Tamra	2013-2014	MGNREGS	AR	25	Ghusuriposh KF	KF	Mixed	40000	44
Tamra	2013-2014	MGNREGS	AR	25	Pankdihi KF	KF	Mixed	40000	33
Tamra	2013-2014	MGNREGS	AR	10	Bartengda KF	KF	Mixed	16000	32
Tamra	2013-2014	MGNREGS	AR	25	Tamra KF	KF	Mixed	40000	54
Tamra	2013-2014	MGNREGS	AR	10	Dumermunda KF	KF	Mixed	16000	52
Tamra	2013-2014	MGNREGS	AR	10	Kanchhinda KF	KF	Mixed	16000	38
Tamra	2013-2014	MGNREGS	AR	20	Jagda KF	KF	Mixed	32000	29
Tamra	2013-2014	MGNREGS	AR	25	Bargaon KF	KF	Mixed	40000	44

Tamra	2013-2014	MGNREGS	AR	10	Jamdarh KF	KF	Mixed	16000	49
Tamra	2013-2014	MGNREGS	AR	10	Bhurung KF	KF	Mixed	16000	28
Jarda	2013-2014	MGNREGS	AR	40	Kundheidiha KF	KF	Mixed	64000	37
Jarda	2013-2014	MGNREGS	AR	20	Kundheidiha KF	KF	Mixed	32000	32
Jarda	2013-2014	MGNREGS	AR	10	Kundheidiha KF	KF	Mixed	16000	46
Jarda	2013-2014	MGNREGS	AR	10	Kundheidiha KF	KF	Mixed	16000	40
Jarda	2013-2014	MGNREGS	AR	20	Majurdima KF	KF	Mixed	32000	55
Sole	2013-2014	MGNREGS	AR	13	Tukuda KF	KF	Mixed	20800	32
Sole	2013-2014	MGNREGS	AR	7	Thakurpali KF	KF	Mixed	11200	28
Sole	2013-2014	MGNREGS	AR	24	Fatatanger KF	KF	Mixed	38400	50
Bonai	2014-2015	National Affn. Programme	ANR	10	Gujapal KF	KF	Mixed	3000	30
Bonai	2014-2015	National Affn. Programme	ANR	20	Kenaveta KF	KF	Mixed	6000	50
Bonai	2014-2015	National Affn. Programme	ANR	10	Ghatposh KF	KF	Mixed	3000	29
Kuliposh	2014-2015	National Affn. Programme	ANR	10	Guhaldihi KF	KF	Mixed	3000	55
Kuliposh	2014-2015	National Affn. Programme	ANR	5	Khatiabhanguni KF	KF	Mixed	1500	25
Kuliposh	2014-2015	National Affn. Programme	ANR	10	Budhakhaman KF	KF	Mixed	3000	34
Kuliposh	2014-2015	National Affn. Programme	ANR	10	Jhinkragohira KF	KF	Mixed	3000	51
Kuliposh	2014-2015	National Affn. Programme	ANR	10	Jhinknali KF	KF	Mixed	3000	46
Kuliposh	2014-2015	National Affn. Programme	ANR	5	Rengali KF	KF	Mixed	1500	54
Tamra	2014-2015	National Affn. Programme	ANR	5	Benuam KF	KF	Mixed	1500	36
Tamra	2014-2015	National Affn. Programme	ANR	5	San- Bhalbunguri KF	KF	Mixed	1500	53
Tamra	2014-2015	National Affn. Programme	ANR	10	Mathurasahi KF	KF	Mixed	3000	42
Tamra	2014-2015	National Affn. Programme	ANR	10	San-Dahichur KF	KF	Mixed	3000	32
Koira	2014-2015	Compensatory Afforestation under CAMPA	AR	5	NF	NF	Mixed	8000	34
Koira	2014-2015	Compensatory Afforestation under CAMPA	ANR	7.12	NF	NF	Mixed	2136	51
Bonai	2014-2015	MGNREGA	ANR	50	Bijadihi KF	KF	Mixed	20000	32
Bonai	2014-2015	MGNREGA	ANR	29	Utunda KF	KF	Mixed	11600	41
Bonai	2014-2015	MGNREGA	ANR	70	Gujapal KF	KF	Mixed	28000	25
Bonai	2014-2015	MGNREGA	ANR	50	NF	KF	Mixed	20000	37
Bonai	2014-2015	MGNREGA	ANR	100	Podagoth KF	KF	Mixed	40000	49

Bonai	2014-2015	MGNREGA	AR	5	Ghanshyampur KF	KF	Mixed	8000	41
Bonai	2014-2015	MGNREGA	AR	5	Khajurdihi KF	KF	Mixed	8000	39
Kuliposh	2014-2015	MGNREGA	AR	15	Angul KF	KF	Mixed	24000	54
Kuliposh	2014-2015	MGNREGA	AR	5	Dhakamunda KF	KF	Mixed	8000	39
Kuliposh	2014-2015	MGNREGA	AR	5	Rengali KF	KF	Mixed	8000	34
Kuliposh	2014-2015	MGNREGA	ANR	20	Deoposh KF	KF	Mixed	8000	48
Kuliposh	2014-2015	MGNREGA	ANR	35	Kuliposh KF	KF	Mixed	14000	40
Kuliposh	2014-2015	MGNREGA	ANR	5	Godruan KF	KF	Mixed	2000	54
Kuliposh	2014-2015	MGNREGA	ANR	10	Bhugula KF	KF	Mixed	4000	43
Kuliposh	2014-2015	MGNREGA	ANR	15	Badjal KF	KF	Mixed	6000	30
Kuliposh	2014-2015	MGNREGA	ANR	40	Jodibahal KF	KF	Mixed	16000	48
Kuliposh	2014-2015	MGNREGA	ANR	20	Babehudi KF	KF	Mixed	8000	55
Kuliposh	2014-2015	MGNREGA	ANR	30	Ranjo KF	KF	Mixed	12000	37
Kuliposh	2014-2015	MGNREGA	ANR	30	Rengali KF	KF	Mixed	12000	29
Kuliposh	2014-2015	MGNREGA	ANR	15	Sabra KF	KF	Mixed	6000	28
Kuliposh	2014-2015	MGNREGA	ANR	5	Angul KF	KF	Mixed	2000	41
Kuliposh	2014-2015	MGNREGA	ANR	100	Dhakamunda KF	KF	Mixed	40000	34
Tamra	2014-2015	MGNREGA	ANR	150	Silikata KF	KF	Mixed	60000	33
Tamra	2014-2015	MGNREGA	ANR	150	Tumbei KF	KF	Mixed	60000	29
Tamra	2014-2015	MGNREGA	ANR	150	Dumermunda KF	KF	Mixed	60000	42
Tamra	2014-2015	MGNREGA	ANR	100	San-Gurundia KF	KF	Mixed	40000	38
Tamra	2014-2015	MGNREGA	ANR	100	Pankdihi KF	KF	Mixed	40000	34
Tamra	2014-2015	MGNREGA	ANR	100	Pankdihi KF	KF	Mixed	40000	38
Tamra	2014-2015	MGNREGA	ANR	200	Gaidega KF	KF	Mixed	80000	38
Tamra	2014-2015	MGNREGA	ANR	100	Dharnidharpur KF	KF	Mixed	40000	28
Tamra	2014-2015	MGNREGA	ANR	100	San-Dahichur KF	KF	Mixed	40000	51
Tamra	2014-2015	MGNREGA	ANR	100	Badgaon KF	KF	Mixed	40000	41
Tamra	2014-2015	MGNREGA	ANR	100	Benuam KF	KF	Mixed	40000	45
Tamra	2014-2015	MGNREGA	ANR	100	Kusumdihi KF	KF	Mixed	40000	33
Tamra	2014-2015	MGNREGA	ANR	18	NF	NF	Mixed	7200	50
Jarda	2014-2015	MGNREGA	ANR	15	Brahmandih KF	KF	Mixed	6000	30

Jarda	2014-2015	MGNREGA	ANR	10	Niktimal KF	KF	Mixed	4000	36
Jarda	2014-2015	MGNREGA	ANR	10	Burda KF	KF	Mixed	4000	27
Jarda	2014-2015	MGNREGA	ANR	50	Kundheidiha KF	KF	Mixed	20000	55
Jarda	2014-2015	MGNREGA	ANR	50	Kundheidiha KF	KF	Mixed	20000	50
Koira	2014-2015	MGNREGA	ANR	100	Jamdihi KF	KF	Mixed	40000	54
Koira	2014-2015	MGNREGA	ANR	20	Kudabira KF	KF	Mixed	8000	34
Koira	2014-2015	MGNREGA	ANR	20	Kunjar KF	KF	Mixed	8000	36
Barsuan	2014-2015	MGNREGA	ANR	170	Nuatantra KF	KF	Mixed	68000	25
Barsuan	2014-2015	MGNREGA	ANR	40	Dengula KF	KF	Mixed	16000	44
Barsuan	2014-2015	MGNREGA	ANR	165	Tantra KF	KF	Mixed	66000	26
Barsuan	2014-2015	MGNREGA	ANR	80	Kamonda KF	KF	Mixed	32000	54
Barsuan	2014-2015	MGNREGA	ANR	10	Ruladihi KF	KF	Mixed	4000	29
Bonai	2015-2016	01-SP- Urban Tree Pltn.	UTP	5000	NF	NF	Mixed	5000	56
Bonai	2015-2016	NAP (FDA)	ANR	10	Gujapal KF	KF	Mixed	3000	58
Bonai	2015-2016	NAP (FDA)	ANR	10	Kenaveta KF	KF	Mixed	3000	55
Bonai	2015-2016	National Affn. Programme	ANR	10	Ghatposh KF	KF	Mixed	3000	58
Kuliposh	2015-2016	National Affn. Programme	ANR	10	Guhaldihi KF	KF	Mixed	3000	55
Kuliposh	2015-2016	National Affn. Programme	ANR	5	Khatiabhanguni KF	KF	Mixed	1500	62
Kuliposh	2015-2016	National Affn. Programme	ANR	10	Budhakhaman KF	KF	Mixed	3000	56
Kuliposh	2015-2016	National Affn. Programme	ANR	5	Jhinkraghohira KF	KF	Mixed	1500	59
Kuliposh	2015-2016	National Affn. Programme	ANR	5	Jhinknali KF	KF	Mixed	1500	62
Kuliposh	2015-2016	National Affn. Programme	ANR	5	Ranjo KF	KF	Mixed	1500	62
Tamra	2015-2016	National Affn. Programme	ANR	25	Benuam KF	KF	Mixed	7500	59
Tamra	2015-2016	National Affn. Programme	ANR	25	San-Bhaldunguri KF	KF	Mixed	7500	59
Tamra	2015-2016	National Affn. Programme	ANR	15	Mathurasahi KF	KF	Mixed	4500	64
Tamra	2015-2016	National Affn. Programme	ANR	15	San-Dahichur KF	KF	Mixed	4500	64
Koira	2015-2016	Compensatory Afforestation under CAMPA	AR	4.096	NF	NF	Mixed	6554	55
Koira	2015-2016	Compensatory Afforestation under CAMPA	AR	4.136	NF	NF	Mixed	6618	58
Koira	2015-2016	Compensatory Afforestation under CAMPA	ANR	3.115	NF	NF	Mixed	935	57
Koira	2015-2016	Compensatory Afforestation under CAMPA	ANR	4.673	NF	NF	Mixed	1402	64
Koira	2015-2016	Compensatory Afforestation under CAMPA	AR	3.649	NF	NF	Mixed	5838	57

Koira	2015-2016	Compensatory Afforestation under CAMPA	ANR	41.661	NF	NF	Mixed	12498	64
Barsuan	2015-2016	Compensatory Afforestation under CAMPA	AR	5.152	NF	NF	Mixed	8243	57
Barsuan	2015-2016	Compensatory Afforestation under CAMPA	ANR	46.866	NF	NF	Mixed	14060	55
Sole	2015-2016	Compensatory Afforestation under CAMPA	ANR	1389.93	NF	NF	Mixed	416979	56
Bonai	2016-17	01-SP-Increasing green cover in the state- Urban tree planting in Bonai town	UTP	5000	NF	NF	Mixed	5000	65
Tamra	2016-17	National Affn. Programme	ANR	25	Mathurasahi KF	KF	Mixed	5000	62
Bonai	2016-17	National Affn. Programme	ANR	15	Kenaveta KF	KF	Mixed	3000	70
Bonai	2016-17	National Affn. Programme	ANR	10	Ghatposh KF	KF	Mixed	2000	64
Bonai	2016-17	Comp. Affn. Under CAMPA	ANR	1.335	San-Sibnathpur KF	KF	Mixed	267	65
Koira	2016-17	Comp. Affn. Under CAMPA	AR	0.51	NF	NF	Mixed	816	64
Koira	2016-17	Comp. Affn. Under CAMPA	AR	2.4	NF	NF	Mixed	3840	69
Koira	2016-17	Comp. Affn. Under CAMPA	ANR	11.906	NF	NF	Mixed	2381	66
Barsuan	2016-17	Comp. Affn. Under CAMPA	AR	2.523	NF	NF	Mixed	4037	70
Barsuan	2016-17	Comp. Affn. Under CAMPA	AR	1.4	NF	NF	Mixed	2240	66
Barsuan	2016-17	Comp. Affn. Under CAMPA	ANR	9.241	NF	NF	Mixed	1800	65
Barsuan	2016-17	Comp. Affn. Under CAMPA	ANR	6.41	NF	NF	Mixed	1282	63
Barsuan	2016-17	Comp. Affn. Under CAMPA	ANR	20	NF	NF	Mixed	4000	61
Bonai	2016-17	Conservation, Management & Development of Sacred Groves under CAMPA Interest Money during 2015-16	-		NF	NF	Mixed	110	70
Kuliposh	2016-17	-do-	-		NF	NF	Mixed	110	62
Kuliposh	2016-17	-do-	-		NF	NF	Mixed	110	61
Kuliposh	2016-17	-do-	-		NF	NF	Mixed	110	62
Kuliposh	2016-17	-do-	-		NF	NF	Mixed	110	67
Tamra	2016-17	-do-	-		NF	NF	Mixed	110	60
Tamra	2016-17	-do-	-		NF	NF	Mixed	110	61
Jarda	2016-17	-do-	-		NF	NF	Mixed	110	63
Barsuan	2016-17	-do-	-		NF	NF	Mixed	110	70
Sole	2016-17	-do-	-		NF	NF	Mixed	110	62
Jarda	2016-17	NBM (Plantation in Private land)	Bamboo	7	NF	NF	Bamboo	2100	65

Bonai	2016-17	NBM (Plantation in Private land)	Bamboo	3	NF	NF	Bamboo	900	70
Kuliposh	2016-17	CSR	AR	30	Mahuldiha KF	KF	Mixed	48000	62
Bonai	2016-17	CSR	AR	25	Jharbhuin KF	KF	Mixed	40000	65
Bonai	2016-17	MGNREGA	ANR	100	Dalki KF	KF	Mixed	20000	70
Kuliposh	2016-17	MGNREGA	ANR	80	Daleisara KF	KF	Mixed	16000	70
Kuliposh	2016-17	MGNREGA	ANR	40	Derula KF	KF	Mixed	8000	68
Kuliposh	2016-17	MGNREGA	ANR	40	Kumudi KF	KF	Mixed	8000	69
Kuliposh	2016-17	MGNREGA	ANR	40	Lunga KF	KF	Mixed	8000	62
Sole	2016-17	MGNREGA	ANR	15	Nahanguda KF	KF	Mixed	3000	66
Sole	2016-17	MGNREGA	ANR	15	Fatatangar KF	KF	Mixed	3000	61
Sole	2016-17	MGNREGA	ANR	15	Kudabira KF	KF	Mixed	3000	65
Sole	2016-17	MGNREGA	ANR	15	Tukuda KF	KF	Mixed	3000	65
Jarda	2016-17	MGNREGA	ANR	25	Ramchinda KF	KF	Mixed	5000	64
Jarda	2016-17	MGNREGA	ANR	25	Lachhda KF	KF	Mixed	5000	68
Jarda	2016-17	MGNREGA	ANR	30	Balia KF	KF	Mixed	6000	62
Jarda	2016-17	MGNREGA	ANR	25	Kello KF	KF	Mixed	5000	62
Tamra	2016-17	MGNREGA	ANR	50	Ludhuni KF	KF	Mixed	10000	64
Tamra	2016-17	MGNREGA	ANR	50	Koilijhar KF	KF	Mixed	10000	68
Tamra	2016-17	MGNREGA	ANR	80	Pitagaon KF	KF	Mixed	16000	70
Tamra	2016-17	MGNREGA	ANR	50	Soldega KF	KF	Mixed	10000	62
Bonai	2017-18	State-OBDP-Bamboo Plantation(Convergence with MGNREGA)	Bamboo	15	NF	NF	Bamboo	6000	71
Kuliposh	2017-18	State-OBDP-Bamboo Plantation(Convergence with MGNREGA)	Bamboo	10	NF	NF	Bamboo	4000	68
Bonai	2017-18	DMF	UTP	10000	NF	NF	Mixed	10000	67
Tamra	2017-18	Comp. Affn. Under CAMPA	ANR	1.634	Bhurung KF	KF	Mixed	325	68
Jarda	2017-18	Comp. Affn. Under CAMPA	ANR	10.59	Kundheidaha KF	KF	Mixed	2118	75
Kuliposh	2017-18	CAMPA	ANR	50	Bahehudi KF	KF	Mixed	10000	68
Kuliposh	2017-18	CAMPA	ANR	50	Kirinda KF	KF	Mixed	10000	66
Bonai	2017-18	CSR	AR	40	Kantasara KF	KF	Mixed	64000	71
Kuliposh	2017-18	CSR	AR	30	Gili KF	KF	Mixed	48000	75

Tamra	2017-18	MGNREGA	ANR	10	Satkuta KF	KF	Mixed	2000	73
Tamra	2017-18	MGNREGA	ANR	14	Gurundia KF	KF	Mixed	2800	73
Tamra	2017-18	MGNREGA	ANR	5	Kantapali KF	KF	Mixed	1000	74
Tamra	2017-18	MGNREGA	ANR	5	Badgaon KF	KF	Mixed	1000	69
Tamra	2017-18	MGNREGA	ANR	10	Tamra KF	KF	Mixed	2000	65
Kuliposh	2017-18	MGNREGA	ANR	20	Rengali KF	KF	Mixed	4000	74
Kuliposh	2017-18	MGNREGA	ANR	10	Mahuldiha KF	KF	Mixed	2000	66
Kuliposh	2017-18	MGNREGA	ANR	5	Sulbadihi KF	KF	Mixed	1000	72
Jarda	2017-18	MGNREGA	ANR	20	Balia KF	KF	Mixed	4000	69
Jarda	2017-18	MGNREGA	ANR	20	Kundheidiha KF	KF	Mixed	4000	67
Jarda	2017-18	MGNREGA	ANR	20	Kauishibahal KF	KF	Mixed	4000	66
Bonai	2017-18	MGNREGA	ANR	50	Khajuribahal KF	KF	Mixed	10000	75
Bonai	2017-18	MGNREGA	ANR	20	Saleidihi KF	KF	Mixed	4000	66
Jarda	2017-18	MGNREGA	AR	7.3	NF	NF	Mixed	11680	66
Tamra	2017-18	MGNREGA	AR	14.24	NF	NF	Mixed	22784	71
Kuliposh	2017-18	OMBADC	ANR	5	Mahulata KF	KF	Mixed	1000	72
Kuliposh	2017-18	OMBADC	ANR	20	Daleisara KF	KF	Mixed	4000	68
Kuliposh	2017-18	OMBADC	ANR	20	Jinknali KF	KF	Mixed	4000	71
Kuliposh	2017-18	OMBADC	ANR	10	Jagati KF	KF	Mixed	2000	72
Kuliposh	2017-18	OMBADC	ANR	30	Kumudhi KF	KF	Mixed	6000	75
Kuliposh	2017-18	OMBADC	ANR	20	Sabara KF	KF	Mixed	4000	71
Kuliposh	2017-18	OMBADC	ANR	20	Ranja KF	KF	Mixed	4000	66
Kuliposh	2017-18	OMBADC	ANR	10	Ranja KF	KF	Mixed	2000	69
Bonai	2017-18	OMBADC	ANR	50	Tendra KF	KF	Mixed	10000	70
Bonai	2017-18	OMBADC	ANR	50	Danta KF	KF	Mixed	10000	69
Bonai	2017-18	OMBADC	AR	5	Chandarpur KF	KF	Mixed	8000	68
Kuliposh	2017-18	OMBADC	AR	10	Sadhubahal KF	KF	Mixed	16000	65
Kuliposh	2017-18	OMBADC	AR	10	Mahuldiha KF	KF	Mixed	16000	74
Kuliposh	2017-18	OMBADC	AR	10	Pudheipani KF	KF	Mixed	16000	69
Kuliposh	2017-18	OMBADC	AR	20	Ladapani KF	KF	Mixed	32000	69
Kuliposh	2017-18	OMBADC	AR	5	Kuliposh KF	KF	Mixed	8000	70

Bonai	2017-18	OMBADC	UTP	6200	NF	NF	Mixed	6200	71
Koira	2017-18	OMBADC	UTP	8200	NF	NF	Mixed	8200	66
Barsuan	2017-18	OMBADC	UTP	550	NF	NF	Mixed	550	68
Barsuan	2017-18	OMBADC	UTP	1550	NF	NF	Mixed	1550	65
Bonai	2018-19	MGNREGA	ANR	60	Kello KF	KF	Mixed	24000	71
Kuliposh	2018-19	MGNREGA	ANR	20.000	Jinkela KF	KF	Mixed	4000	67
Kuliposh	2018-19	MGNREGA	ANR	20	Kardakudar KF	KF	Mixed	4000	72
Kuliposh	2018-19	MGNREGA	ANR	20	Kumundi KF	KF	Mixed	4000	69
Tamra	2018-19	MGNREGA	ANR	20	Dhenkiam KF	KF	Mixed	4000	70
Tamra	2018-19	MGNREGA	ANR	20	San-Badgoan KF	KF	Mixed	4000	67
Tamra	2018-19	MGNREGA	ANR	50.00	Saplata KF	KF	Mixed	10000	67
Tamra	2018-19	MGNREGA	ANR	10	Koilijhar KF	KF	Mixed	2000	73
Sole	2018-19	MGNREGA	ANR	20	Joda KF	KF	Mixed	4000	69
Barsuan	2018-19	MGNREGA	ANR	30	Fatatangar KF	KF	Mixed	6000	75
Bonai	2018-19	MGNREGA	AR	5	NF	NF	Mixed	8000	70
Kuliposh	2018-19	MGNREGA	AR	5.68	NF	NF	Mixed	9088	71
Bonai	2018-19	Comp. Affn. Under CAMPA	AR	7.719	Sisoodihi KF	KF	Mixed	12350	71
Koira	2018-19	Comp. Affn. Under CAMPA	AR	1.354	Koira KF	KF	Mixed	2166	68
Koira	2018-19	Comp. Affn. Under CAMPA	ANR	1.835	Koira KF	KF	Mixed	367	71
Kuliposh	2018-19	WPP & P (CAMPA)	ANR	50	Kumudi KF	KF	Mixed	10000	69
Tamra	2018-19	WPP & P (CAMPA)	ANR	20	Dhenkiam KF	KF	Mixed	4000	72
Bonai	2018-19	CSR	AR	35	Babunuagaon KF	KF	Mixed	56000	67
Kuliposh	2019-20	MGNREGA	ANR	30	Budhapahad KF	KF	Mixed	9000	72
Tamra	2019-20	MGNREGA	AR	10	Gaidega KF	KF	Mixed	16000	83
Sole	2019-20	MGNREGA	ANR	25	Kusumdihi KF	KF	Mixed	7500	68
Tamra	2019-20	GMM (State Plan)	AR	3	NF	NF	Mixed	4800	82
Bonai	2019-20	GMM (State Plan)	AR	3	NF	NF	Mixed	4800	65
Bonai	2019-20	GMM (State Plan)	AR	1	NF	NF	Mixed	1600	85
Bonai	2019-20	GMM (State Plan)	AR	5	NF	NF	Mixed	8000	68
Bonai	2019-20	GMM (State Plan)	AR	5	NF	NF	Mixed	8000	74
Tamra	2019-20	FDA	ANR	26	Tirlakucha KF	KF	Mixed	7800	80

Bonai	2020-21	MGNREGA	ANR	20	Bhoidihi KF	KF	Mixed	6000	85
Bonai	2020-21	MGNREGA	ANR	20	Kareiput KF	KF	Mixed	6000	80
Bonai	2020-21	MGNREGA	ANR	20	Kulkuta KF	KF	Mixed	6000	82
Bonai	2020-21	MGNREGA	ANR	20	Jamjore KF	KF	Mixed	6000	84
Bonai	2020-21	MGNREGA	AR	9.38	NF	NF	Mixed	15008	86
Bonai	2020-21	Comp.Affn.	AR	1.228	Babu Nuagaon KF	KF	Mixed	1965	83
Bonai	2020-21	Green India Mission	AR	5	NF	NF	Mixed	8000	77
Bonai	2020-21	DMF	AR	6	San-Dalki KF	KF	Mixed	9600	87
Bonai	2020-21	DMF	UTP	4000	NF	NF	Mixed	4000	76
Tamra	2020-21	MGNREGA	ANR	30	Pitagoan KF	KF	Mixed	9000	76
Tamra	2020-21	MGNREGA	ANR	25	Boneikala KF	KF	Mixed	7500	89
Tamra	2020-21	MGNREGA with convergence OWP	ANR	25	Ludhuni KF	KF	Mixed	7500	76
Tamra	2020-21	Green India Mission	UTP	3200	NF	NF	Mixed	3200	85
Kuliposh	2020-21	MGNREGA	ANR	30	Arjunjhari KF	KF	Mixed	9000	78
Kuliposh	2020-21	MGNREGA	ANR	20	Deoposh KF	KF	Mixed	6000	80
Kuliposh	2020-21	MGNREGA	ANR	30	San-Jala KF	KF	Mixed	9000	79
Kuliposh	2020-21	MGNREGA	ANR	20	Mahuldiha KF	KF	Mixed	6000	82
Kuliposh	2020-21	DMF	AR	7	Siankudar KF	KF	Mixed	11200	83
Kuliposh	2020-21	DMF	ANR	20	Fuljhar KF	KF	Mixed	4000	85
Kuliposh	2020-21	DMF	ANR	30	Purnapani KF	KF	Mixed	6000	78
Kuliposh	2020-21	DMF	ANR	20	Bonaeikala KF	KF	Mixed	4000	78
Kuliposh	2020-21	DMF	ANR	20	NF	KF	Mixed	4000	77
Kuliposh	2020-21	DMF	UTP	3000	NF	NF	Mixed	3000	80
Kuliposh	2020-21	CSR	AR	25	Mahuldiha KF	KF	Mixed	40000	84
Koira	2020-21	MGNREGA	ANR	35	Balijore KF	KF	Mixed	10500	78
Koira	2020-21	MGNREGA	ANR	20	Ranisal KF	KF	Mixed	6000	81
Jarda	2020-21	MGNREGA	ANR	30	Kello KF	KF	Mixed	9000	78
Jarda	2020-21	MGNREGA	ANR	20	Kundheidaha KF	KF	Mixed	6000	84
Jarda	2020-21	MGNREGA	ANR	20	Kunjaria KF	KF	Mixed	6000	78
		Total :-		14845.3				7407780	

15.4.1- Avenue Plantations:-

List of avenue plantations taken up in the division during last working plan period is as shown in the following table 15.4.1.1.

Table 15.4.1.1- List of Avenue Plantation						
Name of the Division	Name of the Range	Name of the Site	Year-wise (2009-10 to 2019-20)	Name of the Scheme	Avenue Pltn. In RKM	Seedlings planted in lakh
1	2	3	4	5	6	7
Bonai	Bonai	Narendra to Kenaveta	2010-11 (APO-2009-10)	CAMPA	6	0.01500
		Total (2009-10):-			6	0.01500
Bonai	Kuliposh	Kakeiposh-Tankjoda	2011-12	MGNREGS	20	0.05000
		Total (2011-12):-			20	0.05000
Bonai	Bonai	Alekhepur-Gudhiali	2012-13	01-SP-Avenue Pltn. (IGC)	3	0.00750
Bonai	Bonai	Tuniapali-Bandhabhuin	2012-13	01-SP-Avenue Pltn. (IGC)	8	0.02000
Bonai	Kuliposh	Patharpunji-Kumudi	2012-13	01-SP-Avenue Pltn. (IGC)	4	0.01000
Bonai	Bonai	Kanthajodi-Gogua	2012-13	MGNREGS	8	0.02000
Bonai	Bonai	Kello-San Gogua	2012-13	MGNREGS	7	0.01750
Bonai	Kuliposh	Sadhubahal-Sianjor	2012-13	MGNREGS	8	0.02000
Bonai	Kuliposh	Mahulpada-Ruguda on Jangra-Mahulpada Forest Road	2012-13	MGNREGS	2	0.00500
		Total (2012-13):-			40	0.10000
Bonai	Jarda	Jarda-Majurdima Forest Road-16 RKM	2013-14	State Plan	16	0.04000
Bonai	Jarda	Burda-Kusumnali-5 RKM	2013-14	State Plan	5	0.01250
Bonai	Kuliposh	Kurdapali-Mushaposh-9 RKM	2013-14	State Plan	9	0.02250
Bonai	Koira	Koira to Tensa	2013-14	MGNREGS	4	0.01000
Bonai	Koira	Baldihi to Patmunda	2013-14	MGNREGS	2	0.00500

Bonai	Koira	Sargigarh to Gonua	2013-14	MGNREGS	6	0.01500
Bonai	Koira	Kusumdihi to Komanda	2013-14	MGNREGS	4	0.01000
Bonai	Koira	Teherei to Indpur	2013-14	MGNREGS	4	0.01000
Bonai	Kuliposh	Jangra-Badgaon	2013-14	MGNREGS	6	0.01500
Bonai	Kuliposh	Lalei-Sadhubahal	2013-14	MGNREGS	18	0.04500
Bonai	Bonai	Madhupur Chowk to Narendra	2013-14	MGNREGS	8	0.02000
Bonai	Bonai	Bandhabhuin to Dahichor	2013-14	MGNREGS	18	0.04500
		Total (2013-14):-			100	0.25000
Bonai	Bonai	Bijakuli-Jambhirposh	2014-15	01-SP-Avenue Pltn. (IGC)	12	0.03000
Bonai	Kuliposh	Patharpunji-Kumudi	2014-15	01-SP-Avenue Pltn. (IGC)	8	0.02000
Bonai	Barsuan	Raikela-Kamando	2014-15	01-SP-Avenue Pltn. (IGC)	10	0.02500
Bonai	Bonai	Kenaveta -Kantasara	2014-15	MGNREGS	4	0.01000
Bonai	Bonai	Kasada- Kundheiposh	2014-15	MGNREGS	6	0.01500
Bonai	Bonai	Jatrakhaman- Kareiput	2014-15	MGNREGS	8	0.02000
Bonai	Kuliposh	Kuliposh-Khuntaagaon	2014-15	MGNREGS	4	0.01000
Bonai	Kuliposh	Lalei-Bhogra	2014-15	MGNREGS	6	0.01500
Bonai	Kuliposh	Deoposh- Badgaon	2014-15	MGNREGS	6	0.01500
Bonai	Tamra	Narendra-Gurundia	2014-15	MGNREGS	18	0.04500
Bonai	Jarda	Kundheidiha-Balia	2014-15	MGNREGS	10	0.02500
Bonai	Koira	Jamdihi- Kudamusa	2014-15	MGNREGS	4	0.01000
Bonai	Koira	Nuagaon -Balijore	2014-15	MGNREGS	4	0.01000
Bonai	Koira	Kamanda -Bandhal	2014-15	MGNREGS	2	0.00500
Bonai	Sole	Thakurpali- Fatatagar	2014-15	MGNREGS	8	0.02000
Bonai	Sole	Nuapali-Solgudia	2014-15	MGNREGS	10	0.02500
		Total (2014-15):-			120	0.30000
Bonai	Bonai	Barghat-Dahichur road	2015-16	01-SP--Avenue Pltn	16	0.04000
Bonai	Kuliposh	Kuliposh-Talbahali	2015-16	01-SP -Avenue Pltn	8	0.02000
Bonai	Kuliposh	Guhaldihi-Ghatital	2015-16	01-SP-Avenue Pltn	6	0.01500
Bonai	Tamra	Gogua to Badposh	2015-16	MGNREGA	4	0.01000
Bonai	Bonai	Turamura to Bijadihi Bala	2015-16	MGNREGA	8	0.02000

Bonai	Bonai	Dareikela to Barhamusha	2015-16	MGNREGA	3	0.00750
Bonai	Sole	Barhamusha to Nuapali	2015-16	MGNREGA	3	0.00750
Bonai	Bonai	Jangra to Sianjor	2015-16	MGNREGA	6	0.01500
Bonai	Bonai	Kumudi Mandir Chowk to Derula	2015-16	MGNREGA	12	0.03000
Bonai	Bonai	Narendra to Gurundia	2015-16	MGNREGA	10	0.02500
Bonai	Bonai	Thakurpali to Mahuldihi	2015-16	MGNREGA	4	0.01000
		Total (2015-16):-			80	0.20000
Bonai	Bonai	Barghat-Bhadimara	2016-17	01-SP-Avenue Pltn.	20	0.05000
Bonai	Kuliposh	Bhogra to Khandadhar	2016-17	MGNREGA	10	0.02500
Bonai	Kuliposh	Jangra to Sianjor	2016-17	MGNREGA	2	0.00500
Bonai	Sole	Tukuda to Asurkhol	2016-17	MGNREGA	6	0.01500
Bonai	Koira	Kasira	2016-17	OMBADC	15	0.03750
Bonai	Barsuan	Bandal	2016-17	OMBADC	3	0.00750
Bonai	Bonai	Kurda	2016-17	OMBADC	8	0.02000
Bonai	Bonai	Kurda	2016-17	OMBADC	2	0.00500
		Total (2016-17):-			66	0.16500
Bonai	Tamra	Avenue Plantation from Range Office to College Chowk at Gurundia	2017-18	MGNREGA	3	0.00750
Bonai	Kuliposh	Lunga to Dhokamunda	2017-18	MGNREGA	8	0.02000
Bonai	Kuliposh	Rengali to Badchuan	2017-18	MGNREGA	4	0.01000
Bonai	Barsuan	Chordhara to Nuatantra Road	2017-18	MGNREGA	5	0.01250
Bonai	Kuliposh	Talbahali-Khandadhar	2017-18	OMBADC	8	0.02000
Bonai	Kuliposh	Sihidiha -Muchurnali	2017-18	OMBADC	4	0.01000
Bonai	Kuliposh	Ganighasa- Ghatital	2017-18	OMBADC	2	0.00500
Bonai	Kuliposh	Khuntagaon-Sadhubahal Chowk	2017-18	OMBADC	2	0.00500
Bonai	Kuliposh	Dhudi Chowk - Sanjala	2017-18	OMBADC	6	0.01500
Bonai	Kuliposh	Bhagala - Raikelaposh	2017-18	OMBADC	2	0.00500

Bonai	Kuliposh	Sanjala chowk - Jodibahal	2017-18	OMBADC	3	0.00750
Bonai	Tamra	Gurundia - Benuam	2017-18	OMBADC	4	0.01000
		Total (2017-18):-			51	0.12750
Bonai	Kuliposh	Barhaguda to Sanjala	2018-19	IGC-Avenue Pltn.(Convergence with MGNREGA)	2	0.00500
Bonai	Kuliposh	Tankojoda to Hatibahal	2018-19	IGC-Avenue Pltn.(Convergence with MGNREGA)	8	0.02000
Bonai	Tamra	Jamdharha to Saplata	2018-19	MGNREGA	3	0.00750
Bonai	Tamra	Tamra to Jhirpani	2018-19	MGNREGA	2	0.00500
Bonai	Tamra	Dhumapatla to Bartengela	2018-19	MGNREGA	5	0.01250
Bonai	Tamra	Gurundia High School Chowk to Madhupur	2018-19	MGNREGA	1	0.00250
Bonai	Sole	Mahuldihi to Bamra Border	2018-19	MGNREGA	4	0.01000
		Total (2018-19):-			25	0.06250
Bonai	Jarda	Balia to Jarda	2019-20	Avenue Plantation (Convergence with MGNREGA)	20	0.05000
Bonai	Bonai	Pithachore to Badkata(Dalki)	2019-20	MGNREGA	12	0.03000
Bonai	Kuliposh	Bhagabansahi (Fuljhar) to Talginia	2019-20	MGNREGA	4	0.01000
Bonai	Kuliposh	Fuljhar to Uparginia	2019-20	MGNREGA	4	0.01000
Bonai	Kuliposh	Mundagaon to Nischintpur	2019-20	MGNREGA	4	0.01000
Bonai	Kuliposh	Mahullata to Khatiabhanguni	2019-20	MGNREGA	4	0.01000
Bonai	Kuliposh	Jodibahal to Fuljhar	2019-20	MGNREGA	16	0.04000
Bonai	Kuliposh	Fuljhar to Uskala	2019-20	MGNREGA	4	0.01000
Bonai	Kuliposh	Rengali to Banki	2019-20	MGNREGA	2	0.00500
Bonai	Tamra	Bartengela to Badgon	2019-20	MGNREGA	6	0.01500

Bonai	Tamra	Tamra to Jagda	2019-20	MGNREGA	1	0.00250
Bonai	Tamra	Gurundia Model School to Madhupur	2019-20	MGNREGA	4	0.01000
Bonai	Sole	Solguda Village	2019-20	MGNREGA	2	0.00500
Bonai	Jarda	Burda to Budelbahal	2019-20	MGNREGA	6	0.01500
Bonai	Jarda	Jarda PWD Road to Niktimal	2019-20	MGNREGA	7	0.01750
Bonai	Jarda	Kundheidiha to Kindro	2019-20	MGNREGA	14	0.03500
		Total (2019-20):-			110	0.27500
Bonai	Bonai	Baghapali to Jakeikala	2020-21	MGNREGA	2	0.00375
Bonai	Bonai	Brahmannali to Jamkei	2020-21	MGNREGA	2	0.00375
Bonai	Bonai	Banjikusum to San-Gogua	2020-21	MGNREGA	2	0.00375
Bonai	Bonai	Jakeikala to Rushimath	2020-21	MGNREGA	2	0.00375
Bonai	Bonai	Kasada Bajar to Tendra	2020-21	MGNREGA	6	0.01500
Bonai	Bonai	Kandheiposh to Kasada	2020-21	MGNREGA	8	0.02000
Bonai	Bonai	Nuapali to Brahmannali	2020-21	MGNREGA	4	0.01000
Bonai	Koira	Teherei to Machharda	2020-21	MGNREGA	7	0.01750
Bonai	Jarda	Kandhakulei to Binjikhoh	2020-21	MGNREGA	6	0.01500
Bonai	Jarda	Kello- Kunjar Forest Road	2020-21	MGNREGA	6	0.01500
Bonai	Jarda	Kansar to Jalei	2020-21	MGNREGA	10	0.02500
Bonai	Tamra	Ludhuni to Dhenkiam	2020-21	MGNREGA	4	0.01000
Bonai	Tamra	Pitagaon to Gaidega	2020-21	MGNREGA	5	0.01250
Bonai	Tamra	Madhupur to Silikata	2020-21	MGNREGA	8	0.02000
Bonai	Tamra	Dhatkiposh to Satkuta Market Chowk	2020-21	MGNREGA	5	0.01250
Bonai	Tamra	Dhumapatla to Khandapat	2020-21	MGNREGA	1	0.00250
Bonai	Tamra	Jhirpani to Saplata	2020-21	MGNREGA	2	0.00500
Bonai	Tamra	Main Road to Soldega	2020-21	MGNREGA	5	0.01250
Bonai	Sole	Solguda to Kunjar Forest Road	2020-21	MGNREGA	6	0.01500
Bonai	Kuliposh	Ulsurei to Bileipada	2020-21	MGNREGA	2	0.00500

Bonai	Kuliposh	Badgaon to Sabra	2020-21	MGNREGA	6	0.01500
Bonai	Kuliposh	Khandadhar Road to Bhogra	2020-21	MGNREGA	1	0.00250
Bonai	Kuliposh	Bijaghat to Arjunjhari	2020-21	MGNREGA	2	0.00500
Bonai	Kuliposh	Kuliposh to Poigaon	2020-21	MGNREGA	6	0.01500
Bonai	Kuliposh	Dengidarha to Makadnali	2020-21	MGNREGA	2	0.00500
Bonai	Kuliposh	Sulabadihi to Barghat	2020-21	MGNREGA	2	0.00500
		Total (2020-21):-			110	0.27500
		G.Total:-			728	1.82000

15.4.2- Distribution of seedlings :-

Details of seedlings distributed under ‘Agro Forestry’ and “ToF” during last working plant period is as shown in the following table 15.4.2.1

table 15.4.2.1-Seedlings Distributed under Farm Forestry

SI No.	Year	No. of Seedlings distributed	Area of coverage in ha (@1600 plants/ ha)
1	2011-12	410035	256.272
2	2012-13	312803	195.502
3	2013-14	362275	226.422
4	2014-15	123150	76.969
5	2015-16	183600	114.750
6	2016-17	562200	351.375
7	2017-18	267074	166.921
8	2018-19	173331	108.332
9	2019-20	681860	426.163
10	2020-21	1563061	976.913

15.5. Growing Stock & Carbon Stock of ToF:

No specific works have done yet in the division to assess the Growing stock and Carbon Stock of ToF. However necessary data shall be collected from FSI, and monitoring of ToF shall be done .

15.6 Issues and Challenges in management of TOF

- (i) Limited knowledge/Limited documentation: Since the category of TOF was neglected for long time in the past in the ambit of conservation of natural resources, not much is known about the dynamics of trees on farmlands and their corresponding contribution to the production of wood and other products

and services. Similarly, little is known about changes in tree cover in fields and urban systems. Knowledge of trees outside the forest comes mostly from local studies on agroforestry, sylvipastoralism and urban, social, community or rural forestry. This widespread and multipurpose resource, familiar to farmers but poorly defined by managers and mostly absent from official statistics and development policies, needs to be better assessed and known.

- (ii) Deforestation has been mapped and quantified, but very little is known about the fate of land formerly under forest; forest clearing is often followed by the establishment of production systems of which trees are an integral part.

15.7 Potential Areas to develop TOF

- (1) Farm lands: Since large extent of agricultural lands is available in the division area, there is ample opportunity for agro forestry practices. Wind breaks and shelter belts can be developed in all farm lands, thereby; tree cover will develop outside the forest area.
- (2) Roads/Canals: Raising plantations on sides of roads and canals in another activity of scope to enhance tree outside forests.
- (3) River sides: Raising plantations on the sides of “the River Mahanadi” , outside the recorded forest area is another activity of interest in this regard.
- (4) Non forest Government lands: Government lands outside recorded forest areas may be utilized fully for developing tree cover. Planned plantations in Government office compounds, Schools etc. can bring a lot of progress in this regard. Blank government lands in the division area can be identified with line departments and plantations need to be raised.
- (5) Wastelands: All wastelands in the division area need to be restored through proper plantation measures. Funds from MGNRES , OBADC , DMF etc. may be utilized for the purpose.

15.8 Required interventions to develop TOF

- (i) **Assessment & documentation of existing TOF:** Present status of TOF in the division need to be assessed and documented. Proper studies in this line need to be devised. Protection and management measures in these areas also need to be studied.
- (ii) **Inventory on potential areas to develop TOF:** Areas with potential to develop Trees outside Forests need to be identified, and an inventory in this regard need to be prepared. While planning afforestation activities in the division, these areas need to be given priority.
- (iii) **Public awareness to protect and develop TOF:** Lack of awareness among public regarding the importance of protection of tree cover need to be ensured through proper awareness programmes. Celebration of important days related to forests and environment, nature awareness programmes for students from schools and colleges, and other awareness measures need to be arranged in this regard.
- (iv) **Capacity Building Programmes:** Capacity building programmes for general public regarding nursery techniques, raising and maintenance of plantations etc. need to be arranged to motivate people towards raising plantations in private areas and thereby increasing the tree cover.
- (v) **Convergence activities with line departments:** Scope of increasing tree cover in convergence with schemes of other departments such Agriculture Department, Animal Husbandry Department etc need to be explored by planning proper convergence activities.

- (vi) **Effective use of JFMCs:** Existing VSSs in the division need to be utilized effectively in ensuring people participation in increasing tree cover outside forest areas. Organizing awareness programmes and capacity building programmes can be done effectively through VSSs. Further, raising and distribution of seedlings to public to raise in private lands can also be effectively executed through VSSs.
- (vii) **Extension programmes in collaboration with other organizations:** Apt level of extension measures is an important necessity in spreading knowledge on the importance of increasing TOF. Various Government and Non-Government Organizations can be effectively utilized for the purpose. Occasions such as “Van Mahotsav”, “World Environmental Day” and “Wildlife Week” can be utilized effectively for mass plantations in private areas through the involvement of these identified organizations.
- (viii) **Afforestation Activities :** Various afforestation measures aiming increasing tree cover outside forest has listed as follows.
- (i) Raising and distribution of seedlings according to the demand of the public.
 - (ii) Creation of wind breaks and shelter belts in agricultural lands through VSSs(in convergence with agricultural department)
 - (iii) Improving the quality existing TOF through proper ANR measures.
 - (iv) Waste land plantations outside forest areas.
 - (v) Promotion of miyawaki plantations among people to improve tree cover in their lands.

- (ix) **Monitoring and Evaluation:** Proper monitoring and evaluation measures need to be set to assess the improvement in the tree cover. Modern tools such as GIS may be used in this regard. Monitoring need to stressed on the “standards of protection and maintenance of existing cover of trees outside forest” and “improvement in forest cover” over a period of time. Proper documentation in this regards also need to be done.
- (x) **Incentives / Rewards:** People/organizations who come forward for maintaining tree cover in their land, need to incentivized/rewarded. Proper monitoring is a required necessity in this regard. GIS tools may be utilized for the purpose and various levels need to be fixed for giving incentives/rewards in terms of the percentage of tree cover made in their own land over a period of time.

CHAPTER 16

MANAGEMENT OF WATER RESOURCES:

16.1 Introduction: Water is a vital element of all natural resources and essential to life. But availability and quality of fresh water in many regions of the world is increasingly endangered by overuse, misuse and pollution. Due to the growing imbalance between water supply and demand in the world, there is an increasing need for ensuring adequate water quality and quantity. Forests have a close relationship with our water resources. Sustainable forest management is of vital importance for supply of good-quality fresh water, protection against natural hazards like floods or soil erosion, and for combating desertification. While planning forest management in Bonai Forest Division, enough importance to be given for management of water resources in the division.

16.2 Water Resources in the division:

(i) Rivers and Tributaries: 'The River Brahmani' is the major river running through the territory of this division. It has many tributaries in the forms of hill streams all along its eastern and western bank within the Division. The most important among these hill streams is the Kuradhi nallah which originates from Toda block near Tensa and from there, after a course due north-west, joins the river Brahmani at Barghat. Other smaller hill stream tributaries of the river Brahmani in East Bonai are Sarkunda nallah, the Amrudhi nallah. All these nallah, the Rangan nallah and Karapani nallah. All these nallahs are perennial in nature.

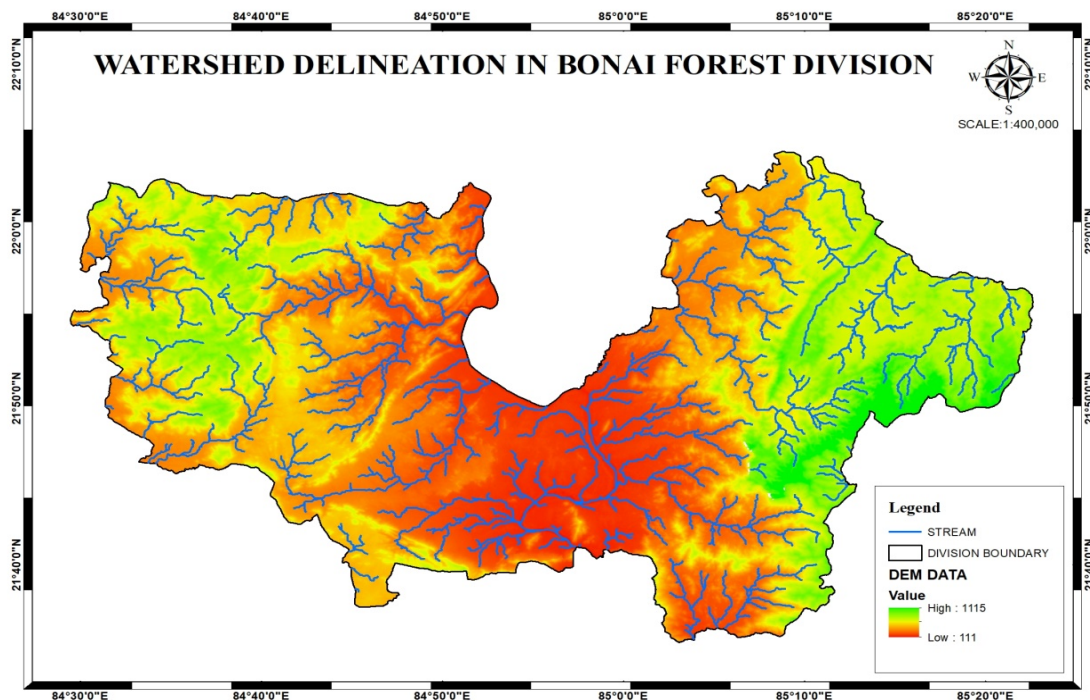
The drainage of greater part of western Bonai is towards the river Brahmani. Along the west bank, the river Brahmani receives only few streams which are not perennial in nature. Among these katangmurah nallah and Rukara nallah are worth mentioning. Katangmurah nallah is formed by joining of Saplata nallah- flowing through the Kunjar and Sulguda blocks and kendujhar nallah-flowing through Rushimath and Gurundia block. It passes through Dhenkiam blocks and then joins the Brahmani river. Rukara nallah flows through Balia, Dandpat and Ulsura blocks and joins the Brahmani near Jibka. There are quite a few small non-perennial nallahs which flow through Dandapat, Sinduria and Ulsura blocks and fall directly into the Brahmani river. Kola and Korapani nallahs are also perennial and join the Brahmani river near Barkote and Jangla respectively. Kalo nallah originates from Mahulpada block while Korapani originates

from pauri area. Amrudhi nallah and Khandadhar nallah are other two important nallahs which originate from southern portions of Amrudhi block and Khandadhar block respectively. Both of these nallahs join together and fall into the Brahmani river near poigaon.

Apart from the Brahmani, other important river is Karo which runs a very short distance through the Bonai Division. It originates from the North-West portion of Sarkunda block near Dengula and flows in northern direction and forms the north-eastern boundary of Karo block. Beyond Karo block it enters into Bihar State and Joins the river Koel.

Quite an appreciable area of west-Bonai drains westwards to the Bheden river. The main feeders of the Bheden river are the Bheden nallah flowing through Balai and Kantamunda blocks, the Purpota nallah flowing through Majurdima, Raipiri and Kelo blocks, Kharli nallah and purpota nallah are perennial in nature.

Watershed delineation map of the division is as shown below.



(ii) **Artificial water bodies created within forest areas:** There are numerous artificial water bodies created within the forests of the division to improve water availability in wildlife habitat. Details have already provided in Chapter 5 of Part 1 of the plan.

(iii) **Water sources outside Forest areas:** Ponds, canals and reservoirs in the division are sources of water for general public for domestic use mainly for agricultural purposes. Irrigation potential of various blocks of the division from surfaces sources have provided in table 16.2.1.

(iv) **Ground Water:** As per Central Ground Water Board, all the blocks under the division are in safe limits of ground water utilization. Status of aquifers have already been discussed in chapter 5 of Part 1 of the plan. Details of irrigation potential of ground water sources in the division (blockwise) has provided in table.16.2.1.

Table 16.2.1 Irrigation potential of various blocks in the Division									
Block:- BONAI									
Sl.No	Source	Kharif	Rabi	Summer	inha. Total	Kharif	Rabi	Summer	BCM Total
1	SurfaceIrrigation								
(i)	Canal(Major&MediumIrrigation)	0	0	0	0	0.00	0.00	0.00	0.00
(ii)	Minor Irrigation tanks	1035	114		1149	0.02	0.00	0.00	0.02
(iii)	Lift Irrigation/Diversion	788	469		1257	0.01	0.00	0.00	0.02
(iv)	VariousWaterBodies includingRainwaterharvesting	1100	583		1683	0.02	0.00	0.00	0.02
(v)	Treated Effluent Received from STP				0	0.00	0.00	0.00	0.00
(vi)	Untreated Effluent				0	0.00	0.00	0.00	0.00
(vi)	Perennial sources of water.				0	0.00	0.00	0.00	0.00
2	GroundWater					0.00	0.00	0.00	0.00
(i)	Open Well	352	352		704	0.01	0.00	0.00	0.01
(ii)	Deep Tube Well				0	0.00	0.00	0.00	0.00
(iii)	Medium Tube Well				0	0.00	0.00	0.00	0.00
(iv)	Shallow Tube Wells				0	0.00	0.00	0.00	0.00
		3275	1518	0	4793	0.05	0.01	0.00	0.06
Block:- LAHUNIPARA									
Sl.No	Source	Kharif	Rabi	Summer	inha. Total	Kharif	Rabi	Summer	BCM Total
1	SurfaceIrrigation								
(i)	Canal(Major&MediumIrrigation)	0	0	0	0	0.00	0.00	0.00	0.00
(ii)	MinorIrrigationtanks	3918	380		4298	0.06	0.00	0.00	0.07
(iii)	LiftIrrigation/Diversion	1005	650		1655	0.02	0.00	0.00	0.02
(iv)	VariousWaterBodies includingRainwaterharvesting	1151	633		1784	0.02	0.00	0.00	0.02

(v)	TreatedEffluentReceivedfromSTP				0	0.00	0.00	0.00	0.00
(vi)	UntreatedEffluent				0	0.00	0.00	0.00	0.00
(vi)	Perennialsourcesofwater.				0	0.00	0.00	0.00	0.00
2	GroundWater					0.00	0.00	0.00	0.00
(i)	OpenWell	340	350		690	0.01	0.00	0.00	0.01
(ii)	DeepTubeWell				0	0.00	0.00	0.00	0.00
(iii)	MediumTubeWell				0	0.00	0.00	0.00	0.00
(iv)	ShallowTubeWells				0	0.00	0.00	0.00	0.00
		6414	2013	0	8427	0.10	0.02	0.00	0.12

Block:- KOIRA									
					inha.				BCM
Sl.No	Source	Kharif	Rabi	Summer	Total	Kharif	Rabi	Summer	Total
1	SurfaceIrrigation								
(i)	Canal(Major&MediumIrrigation)	0	0	0	0	0.00	0.00	0.00	0.00
(ii)	MinorIrrigationtanks	582	110		692	0.01	0.00	0.00	0.01
(iii)	LiftIrrigation/Diversion	113	144		257	0.00	0.00	0.00	0.00
(iv)	VariousWaterBodiesincludingRainwater harvesting	1051	533		1584	0.02	0.00	0.00	0.02
(v)	TreatedEffluentReceivedfromSTP				0	0.00	0.00	0.00	0.00
(vi)	UntreatedEffluent				0	0.00	0.00	0.00	0.00
(vi)	Perennialsourcesofwater.				0	0.00	0.00	0.00	0.00
2	GroundWater					0.00	0.00	0.00	0.00
(i)	OpenWell	230	260		490	0.00	0.00	0.00	0.01
(ii)	DeepTubeWell				0	0.00	0.00	0.00	0.00
(iii)	MediumTubeWell				0	0.00	0.00	0.00	0.00
(iv)	ShallowTubeWells				0	0.00	0.00	0.00	0.00
		1976	1047	0	3023	0.03	0.01	0.00	0.04

Block:- GURUNDIA									
Sl.No	Source	Kharif	Rabi	Summer	inha. Total	Kharif	Rabi	Summer	BCM Total
1	Surface Irrigation								
(i)	Canal (Major & Medium Irrigation)	0	0	0	0	0.00	0.00	0.00	0.00
(ii)	Minor Irrigation tanks	144	0		144	0.00	0.00	0.00	0.00
(iii)	Lift Irrigation / Diversion	409	340		749	0.01	0.00	0.00	0.01
(iv)	Various Water Bodies including Rain water harvesting	1200	603		1803	0.02	0.00	0.00	0.02
(v)	Treated Effluent Received from STP				0	0.00	0.00	0.00	0.00
(vi)	Untreated Effluent				0	0.00	0.00	0.00	0.00
(vi)	Perennial sources of water.				0	0.00	0.00	0.00	0.00
2	Ground Water					0.00	0.00	0.00	0.00
(i)	Open Well	368	350		718	0.01	0.00	0.00	0.01
(ii)	Deep Tube Well				0	0.00	0.00	0.00	0.00
(iii)	Medium Tube Well				0	0.00	0.00	0.00	0.00
(iv)	Shallow Tube Wells				0	0.00	0.00	0.00	0.00
		2121	1293	0	3414	0.03	0.01	0.00	0.04

[illegible]

(i) **Over exploitation and reduced scope for augmentation:** All the viable sites are being exploited in a fast rate and the utilisation of forest resources is quite intensive. The scope for augmenting the existing supply will be a difficult job.

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- (iii) **Depleting ground water:** Because of increased ground water supply resources in villages surrounding forests and industries, there is a sign of depletion of ground water resources.
- (iv) **Ground water quality deterioration:** Increased human activities directly contaminate the groundwater. Pollution of groundwater due to indiscriminate disposal of industrial effluents and municipal waste in water bodies is a major concern in many cities and industrial clusters in India. Intensive use of chemical fertilisers in farms and indiscriminate disposal of human and animal waste on land result in leaching of the residual nitrate and potassium causing high nitrate concentrations in groundwater.
- (v) **Growing water demand and resulted Water Scarcity:** A wide variety of demographic and socio-economic trends such as population growth, urbanisation, industrialisation, changes in agricultural practices and cultural changes, in combination, have triggered off this explosion in demand for water.
- (vi) **Non availability of adequate Scientific Data:** One of the biggest challenges facing the water management sector in the country is the non-availability of adequate scientific data needed for water budgeting, allocation planning, and water management decision-making.
- (vii) **Unrealistic Water Demands and Use Rates :** Demand estimation in different sectors of water use is often based on agency norms. These norms fail to capture the variations in physical, socio-economic, cultural and institutional factors that greatly influence the demand of water in various sectors. As a result, the demand figures estimated through norms are unrealistic.

16.4. Strategy-Integrated Water Resource Management :

In order to deal with the complexity of water management issues, discussion over water resources is typically separated into distinct topics such as Economics, Water Quality, and the Environment. In reality, however, each of these issues are interconnected;.In order for water security to be managed effectively, the use of economic and policy instruments cannot be considered in isolation, but rather should be considered in terms of their wider

impact on society and the environment. Hence water resource management to be ensured by following principles of Integrated Water Resource Management as follows.

- (1) Fresh water is a finite and vulnerable resource essential to sustain life, development, and the environment;
- (2) Water development and management should be based on a participatory approach, involving users, planners, and policy makers at all levels;
- (3) Women play a central part in the provision, management, and safeguarding of water;
- (4) Water has an economic value in all its competing uses and should be recognized as an economic good.

Coordinating the use of different instruments in terms of history, socio-economic conditions, cultural and political context, and environmental characteristics is very much necessary in this regard.

16.5. Activities recommended towards WRM :

- (1) **Afforestation measures to rejuvenate natural resources:** Apt afforestation measures need to be taken up to rejuvenate the existing natural resources in the division.
- (2) **Soil & Moisture Conservation Measures:** Construction of check dams, nalla bunds, percolation tanks at suitable locations will help in effecting additional recharge to the ground water reservoir. Sub-surface dams may also be constructed at hydrogeologically suitable sites to arrest sub-surface out flow of ground water in the weathered mantle of hard massive rocks. This will increase the dynamic ground water storage in the adjacent phreatic aquifer.
- (3) **Checking the sources pollution:** Strict actions to be ensured to check sources of pollution of water sources. Inter departmental co-ordination to be ensured in this regard.
- (4) **Water Quality Assessment:** Water quality assessment at regular intervals especially in forest areas where mining activities are allowed, is a very much needed step.
- (5) **Hydrological studies to find out sustainable sources:** Intensive hydrogeological surveys and exploration aided by remote sensing and spot resistivity sounding should

be carried out in the division to precisely demarcate hydro geologically & ecologically favourable areas suitable for various ground water abstraction structures

- (6) **Sustainable utilization of resources:** Based on realistic data, water demand and supply need to be studied and plan to be developed for ensuring sustaining utilization of resources, with the involvement of various sectors.
- (7) **Ground water monitoring :** For water level and water quality, ground water monitoring should be ensured through National Hydrograph Stations to assess the impact of envisaged ground water development on the ground water regime, in co-operation with Water resource department.
- (8) **Awareness Measures & Agriculture Extension Programmes:** Awareness programmes on safe use of water and conservation of water resources can be conducted through VSSs. Through VSSs and extension programmes of agriculture department motivation of people (mainly farmers) and guide the farmers to adopt suitable cropping patterns to maximize the benefits of irrigation through dug wells / bore wells.

16.6. Riparian restoration for river rejuvenation in Bonai Forest Division

16.6.1 Bonai Forest Division, Sundargarh enjoys several perennial streams, seasonal streams and riparian ecology of Brahmani river. Globally we are facing the habitat degradation and biodiversity loss. Riparian vegetation acts as a buffer which filters the sediments, nutrients and pollutants that may otherwise reach the streams; it helps to stabilize stream banks, increases flood control, and provides habitats for both aquatic and terrestrial species and acts as an ecological network, increasing habitats connectivity. On the other hand, steep slopes are highly susceptible to landslip and contribute to the increase in erosion and sediment exportation in the watershed and therefore vegetation is crucial to maintain the stability of slopes due to root water uptake and especially the reinforcement of soil structure by plant roots.

16.6.2. In Bonai Forest Division, major threats to riparian ecosystem are illegal sand mining and anthropogenic activities in rivers and river banks, inappropriate drainage systems etc. . The population loss of aquatic & wetland flora along with faunal & avifaunal species are resultant negative effects. Carbon sequestration, Species population analysis, analysis of riparian ecological parameters and SWAT model simulation have properly not addressed and

quantified in riparian ecology of this division. There is a lack of ecological information on them. Hence, the restoration strategies should be developed soon and various studies required in this regard are as detailed below.

1. Habitat restoration: Multiple studies are needed to understand the contemporary status of the Brahmani river basin and associated areas. The population inventory of available faunal species and their annual behaviors should be prepared. The enumeration of plants species in riparian ecology of BFD should be carried out and compared with past available data. On the basis this study results, restoration strategy can be devised.

2. Soil erosion studies: Due to flood and loss of wetland and aquatic flora, soil erosion has observed in many areas. To understand the changes in landscapes due to soil erosion, runoff, sediment transport, geomorphic modeling along with Terrestrial Lesser Scanning (TLS) survey can be carried out. Role of gabions, check dam etc for soil conservation can be evaluated using the SWAT (Soil and water assessment tool) before making the restoration strategy.

3. SolVES: The social values for ecosystem services (SolVES) model can be used to carried out to map survey to know the local communities perception on riparian restoration, life-sustaining services, biological diversity and aesthetics the Brahmini river systems offers.

4. Studies on Sediment Export Estimation (SEE): Using the turbidity of stream flow, the SEE can be calculated mathematically season wise which will be helpful to make the restoration model.

5. Studies using InVEST model: InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) can be used to evaluate soil loss calculation using following formula:

16.6.3 Proposed Management interventions.

Two management initiatives which can be taken for restoration of riparian ecosystems in Bonai Forest Division are (1) Planned protection activities & (2) Restoration of degraded riparian Zones.

(1) Protection Activities: Existing riparian forests in Bonai Forest Division to be identified and inventoried. Effective protection activities to be imparted to these zones from anthropogenic activities. Success of riparian ecosystem more like where

fundamental disturbance regimes continue to occur relatively unhindered by human influence. Effective protection from grazing by live stock, illicit felling, soil erosion, etc need to be addressed through properly planned protection measures.

Restoration of degraded riparian Zones: Degraded patches of riparian forests need to be identified and mapped. Drivers for degradation to be identified and effective protection measures need to be ensured to check further degradation. Land use in these locations need to be **Dynamics of forest and stands.**

- v. To prevent the further degradation of environment by restricting felling of trees and giving more emphasis on preservation of flora and fauna of these forests.
- vi. To improve the condition, composition and productivity of the existing forests by further enriching the standing crop through scientific management.
- vii. To increase productivity of forests ecosystem and maintain the vitality.
- viii. To rehabilitate the depleted forest through artificial regeneration and tending of the existing vegetation

1.1.1.2 Forests and Soils.

- iii. To rehabilitate the barren, degraded and depleted forest areas and mining degraded areas through artificial regeneration and by adopting various soil conservation measures.
- iv. To reduce soil erosion, enhance fertility of Soil and ensure the stability of forest ecosystem.

1.1.1.3 Forest and water.

- iv. To conserve and improve the existing vegetative-cover for soil and water conservation with a view to ensure ecological and environmental stability.
- v. To conserve water sources, enhance water conservation capacity of forest ecosystem and assist in regulating the flow of water in its catchment.
- vi. To construct water harvesting structures, checkdams, plug gullies and protect river banks, nala banks on either side.

1.1.1.4 Forest Biodiversity.

- v. To protect and manage wildlife resources with a view to conserve and enrich biodiversity.
- vi. To conserve genetic resources and maintain their sustainable use.
- vii. To assess the biodiversity of forest periodically and improve the Important Value Index of species.
- viii. To ensure enforcement of various acts and rules existing to protect biodiversity

1.1.1.5 Climate and Forests.

- iv. To reduce emissions from deforestation and forest degradation
- v. To enhance Carbon Sequestration in forest by following most desirable level of biomass production and find ways for adoption with change in climate
- vi. To manage and improve forests outside recorded forest areas.

1.1.1.6 Socioeconomic consideration and generation of forest based Employment opportunities and livelihood options.

- viii. To endeavor to meet the requirements of people for agricultural small timbers, firewood, bamboos and other forest produces.
- ix. To promote development of sustainable and non-destructive livelihood opportunities for local communities
- x. To promote Joint Forest Management involving Vana Samrakhyana Samitis for sustainable management of forests.
- xi. To ensure sustainable production of Non-Timber Forest Produce and thus enhance livelihood opportunities of the communities dependent on forests.
- xii. To meet needs and requirements related to forest produce of local people and local communities living in and around forest areas.
- xiii. To enhance their livelihood, ensure usufruct benefit sharing and protect their traditional knowledge and traditional/cultural practices.

- xiv. To generate employment for local people by involving them in various forestry operations including collection of various Non Timber Forest Produce (NTFP) inducing a sense of belonging for the forest in them.

1.1.1.7 Tools for integrated development.

- iii. To introduce tools for scientific management of the forests.
- iv. To take up the infra structure development for integrated development of the Division.

1.1.1.8. Public awareness

- ii. To educate people regarding the importance of conservation of nature and natural resources through proper measures.
- iii. To ensure capacity building of local forest dependent community towards conservation of nature and natural resources.

(2) Aligned towards suitable practices for existence of riparian forests. Blank patches need to be restocked through afforestation by using suitable species. Removal of invasive species also need to be done. Threatened flora and fauna need to be identified and conservation measures need to be devised.

CHAPTER- 17

Climate Change and REDD+

17.1 Climate Change:

Climate is nothing but the weather at a location over a long time. Within a span of 30 years normal variation may occur. Climate change means more than changes in the weather. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change of climate which is attributed directly or indirectly to human activity and alters the composition of global atmosphere so which is in addition to natural climate variability observed over comparable time periods.

Evidence of Global Warming can be observed in global average air and ocean temperatures widespread melting of snow and ice for rising the Sea level. Causes of Global Warming is many dominant effect is the increased emission of green house gases with Carbon dioxide (CO₂) being the main one.

Human activities that contribute to global warming:-

1. Increasing atmospheric concentrations of green house gases for warming effect.
2. Global changes to land surface such as deforestation for a warming effect.

17.2 Importance of Forest for Climate change:

Forests are linked to climate change in the following ways:

- i. They are source of green house gas (GHC) emissions.
- ii. They offer mitigation opportunities to stabilize GHC concentration because they act as both Sink & Pools are forest biomass and forest can act as sink through the Tree growth and resultant biological Carbon sequestration.
- iii. They are impacted by climate change.

Changing biodiversity, pattern of growth of species, physiological changes in plant life cycles, changes boundaries of eco-systems and other biotic and abiotic response.

As Global community is increasingly concerned about Climate change, attention has been drawn to the role of Forest in this regard. Forest plays an important role in the Global carbon Cycle because they store larger quantities of Carbon in vegetation and soil.

Studies reveals that 17% of global green house gas emission is only contributed by deforestation. The increase in green house gases is projected to lead 1-3.5⁰ in Global Mean surface temperature by the year 2100.

17.3. REDD+

REDD+ Reducing Emission from Deforestation and Degradation, along with conservation of forests has been recognized as a very innovative way to tackle climate change. During REDD+ decision taken in the meeting of conference of parties in Cancun, Government of India agreed to boost action to curb emissions from deforestation and forest degradation with technological and financial support of the developed countries. It has also been decided to incentivize local communities, who are involved in this endeavour.

Pursuant to various decisions taken at the Conference of Parties of UNFCCC on REDD+, following actions are required to be initiated at National level in India.

1. To develop National REDD+ strategy and results based action that should be fully measured, reported and verified.
2. To identify drivers of deforestation and forest degradation and also activities that result in reduced emissions and increased removals and stabilization of forest carbon stocks.
3. To estimate anthropogenic forest related Green house gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes.
4. To develop and implement the Monitoring Reporting and Verification (MRV) protocols and fair benefit sharing mechanisms at National and State levels, and
5. To protect safeguards, ensuring the full participation of indigenous peoples and local communities and conserving biodiversity.

To implement specific REDD+ action in the Bonai Forest Division following interventions are required to be taken for Forest management.

17.3.1. Addressing Drivers of Deforestation and Degradation.

Due to dependency of local people on the forests, the forests are in various stages of degradation. As per report of ORSAC and NRSC, degradation in the form of high density forest converting to low density forest. Following interventions need to be implemented to manage the situation.

17.3.2 Provision of alternative Energy Sources :

In VSS meetings, the forest personnel should persuade the villagers to use of LPG instead of fuelwood.

Energy efficient chullahs should be provided to the households of Forest fringe villages.

17.3.3 Enhancement of fodder availability :

Almost all the cattle of villagers of nearby forest areas are dependent on forest for their fodder. Hence, livestock grazing in forests should be effectively addressed by securing enhanced fodder availability beyond across forests, grasslands/ agro ecosystem. For this interdepartmental co-ordination is necessary.

17.3.4. Conservation and Enhancement of Forest Carbon Stocks :

There is a wide scope in this Division for enhancing Carbon stocks.

(i) Enhancing forest carbon stocks in Moderately Dense Forests. Better protection, Fire protection and control, regulated grazing, eradication of invasive species, management of insects and other pathogens required soil moisture conservation are the key intervention to increase the density, enhance biomass and carbon stocks.

(ii) Restoration of Open Forests:-Areas available as Open Forests are subjected to intense biotic and abiotic pressure and biomass removal.

Following interventions are required to be carried out which has already been discussed in concerned Working Circle.

- a. ANR Plantation of indigenous species.
- b. Plantation of grasses in Gochar/ non-forest lands.
- c. Construction of soil-moisture conservation measures or rain water harvesting structures.
- d. Protection from Fire-
- e. Restoration of Scrub Forests by planting scrub species with palatable grasses and intensive soil moisture conservation methods need to be implemented.
- f. Enhancing Carbon stocks in trees of Urban areas. Trees in urban areas have been providing environmental services with supply of fuel wood to Urban poor people. Urban forests emerge as an existing opportunity to mitigate Climate change, ameliorate air pollution, and help in improving water regime and biodiversity in Urban environment.
- e. Agro Forestry for creation of carbon sinks outside forests- To cater the need of growing population, planting of trees or creation of forest outside traditional forest areas is necessary. Trees on non-agriculture rural lands like homesteads, school yards, compounds of various offices, Private/ Public establishments, Road side, Canal side etc. can be planted.

17.3.5 Sustainable Management of Forests

Sustainable management is the management which is economically feasible, socially acceptable and Environmentally sound. If the drivers of REDD would be addressed then it is expected to bring positive change in Environment and Climate Change.

17.3.6. Safeguards unde REDD+ :

As per Cancun agreement, there is a need to ensure social and environmental safeguard for successful implementation of REDD+.

Environmental safeguard:

In no case natural forests converted to plantations.

Land Use change should be arrested.

Native species should be conserved and restored.

Social Safeguard

Committees have already been engaged in protection of forest through JFM. Total 299 numbers of VSS have been formed and there is wide scope to increase this number.