

WORKING PLAN FOR HOSHIARPUR, DASUYA AND GARHSHANKER FOREST DIVISIONS

PART- I

Summary of the facts on which the proposals are based

CHAPTER –I

1. The tract dealt with.

Name, ground situation, topographic sheet reference: -

The forests dealt with in this working plan fall under three territorial Forest Divisions namely Hoshiarpur, Dasuya and Garhshankar Forest Division. The areas of R-IV Karanpur, R-V Bindra Ban and P.Nandbir of Dasuya Forest Division are excluded from this working plan as a separate working plan for these forests already exists. Hoshiarpur District lies between longitude 75° 28' and 76° 32' East longitude 30° 52' and 30° 5' North. Following survey sheets cover the area concerning this working plan in which these three territorial forest divisions fall: -

Scale	1:2,50,000 & 4" = 1 mile	43P,44M,53A & 53B
Scale	1:50,000 & 1" = 1 mile	43P/12,16 44M/6,9,10,11,13,14,15,16 53A/2,3,4,7,8,12 53B/1,5,9,

There is also a Wild life Forest Division with head quarters at Hoshiarpur dealing with wildlife management aspects falling in the area concerned under this working plan. The area dealt with in this Working Plan is bound by River Beas on North, River Sutlej on South, Himachal Pardesh and Ropar Forest Division on East and Kapurthala and Jalandhar Districts on West. Area of Balachaur sub division of Nawanshahar district falls in territorial jurisdiction of Garhshankar Forest Division. Gurdaspur and Pathankot districts are on the northern side of Dasuya Forest Division.

Different ranges of the divisions of this working plan are as under: -

Sr. No.	Division	Ranges
1	Garhshankar.	Garhshankar, Mahilpur, Balachaur-I & II and Kathgarh-I & II.
2	Hoshiarpur.	Hoshiarpur, Hariana, Mehngrowal and Dholbaha.
3	Dasuya.	Dasuya, Mukerian, Badla and Talwara-I & II.

2. Configuration of the Ground

Basically the whole area forms part of the Shiwalik Hills and is a sub-mountainous tract. A large number of hill torrents and small rivulets (choes) divides the area ultimately draining into River Sutlej and River Beas. The slopes along the main ridges and choes are quite steep but slope is quite gentle in the riverain tract which is almost plain. Elevation varies from 311.5 mtr. to 716.52 mtr. in the area. Highest point is Chamuhi which is at height of about 739.56 mtr. The areas of this working plan fall in number of watersheds.

Distribution of block-forests areas falling in these division on the basis of configuration is as under: -

S.No.	Class	Area (Ha)
1.	Hills Area	8201.50
2.	Foot Hill	574.90
3.	Bela Area	3287.30
4.	Mand Area	2310.47
	Total	<u>14374.17</u>

The working plan covers approximately 1662 Ha. Of strip forests which do not include Zila Parishad Roads.

S.No.	Forest Type	Area (Ha)
1.	Roads	571.75
2.	Rails	320.86
3.	Canals	593.12
4.	Bandhs & Drains	176.38
	Total	<u>1662.11</u>
	G. Total:	16036.28

3. Geology Rocks and Soilv

As far as geology is concerned the rocks are classified into two broad belts an outer belt and an inner belt, formed respectively during the upper tertiary and lower tertiary periods.

Upper Shivalik	:	Soft Earths, Clays & Boulders, Conglomerates.
Middle Shivalik	:	Massive sand rock & Clay beds.
Lower Shivalik	:	Grey Micaceous sand stones and un-fossiliferous slabs.

The plain consists of alluvium of Indo-Gangetic origin. In fact the above tract is basically the part of watersheds of Eastern drainage and Western drainage.

Soil: -

On the basis of morphological, physico-chemical and chemical studies of the soil profile from the different meteorological divisions, Sharma (1953) classified the soils into the World Group Zone No.2. These soils represent those developed under humid conditions and hot climate of sub mountainous areas. Profile of virgin wasteland of these areas consists of following zonal descriptions:

<u>Depth (Inches)</u>	<u>Description</u>
0-6	Dark brown, silty clay loam, no effervescence with HCl, pH approx.7.
6-42	Brown clay compact, no effervescence with HCl, pH same as above.
42-66	Same as above.
66-92	Same as above, but grey spots are found sporadically.
92-108	Grey loose fine, no effervescence with HCl, pH approx. 6.5.
108-120	Dark brown, clay loam compact, no effervescence with HCl, pH same as above.

Profile analysis reveals that soil is clayey with large preponderance of silt fraction and the soils are siliceous in nature. The amount of silica sesquioxide increases with depth while Calcium Carbonate is absent. The clay is kaolinetic mixed with hydrous mica and montmorillonetic clay minerals in the bottom layer. These soils have been designated as transitional soils of alluvial origin. The hilly areas have a slope varying from 10 to 50 percent or even more at a few places. In the hills and foothills, the soil is almost pure sand or clay mixed with coarse ingredients of pebbles and gravel. In the belt areas, the soil is comprised of coarse sand or sandy loam. In mand areas the top layer is almost invariably of silt loam with comparatively fine sand underneath. The soils are generally shallow in hills and foothills and quite deep in the plains. They are generally well drained. Soil is mostly poor in nitrogen and organic matter.

4. Climate

In mountainous and sub-mountainous zone temperature and other climatic factors are greatly altered by altitudinal changes. The climate of the area is described as semi-arid. Most of the rainfall is received during monsoon from July to middle of September, while rains are few during January-February. Average annual rainfall as per the recent data varies from 272.72 mm to 1284 mm. Precipitation in the form of dew also occurs in winter from October to January which has beneficial effects on young plants. April to June are generally dry months. During summer, the average maximum temperature recorded was 41.2^oC and minimum temperature recorded was

23.60⁰ C and during winter the average maximum temperature of 27⁰ C and minimum temperature of 0.2⁰ C were recorded in the month of January. Due to high temperature and dry climate in the summer months mortality in young plantations has been noticed. During winter pool frost and advective frost is quite common which cause damage to frost-tender species in the young stage. **Table No. 1, 2, 3** shows monthly rainfall data recorded in the last ten years for three main stations i.e Dasuya, Hoshiarpur, Garhshankar (Ballawal Sounkri), respectively.

5. Water Supply.

The area is slopy and undulating, the precipitation in the Shiwalik Hills is drained by ‘Choes’ of hill torrents which spring up during the rainy season. Irrigation is not possible in case of plantations in the hills and foothills of Shiwaliks because of acute shortage of water even for drinking purposes. Conventionally hand watering or irrigation is not undertaken in Shiwalik plantations as these are only rainfed. Therefore, the success of plantations mainly depends on timely planting during the monsoon period and soil and water conservation measures taken up in the vicinity of plantations. Along canal strips however, there is no problem of water for irrigation. Even in the neighborhood of strip forests i.e. roads, rails, bundhs and drains, lots of tube wells are existing and water for irrigating the plantations can be arranged from these sources easily. In the mand areas the water table is shallow at only 3 to 4 meters deep and elsewhere in the plains it is 15 to 25 meters deep and temporary wells can easily be dug up for the purpose of hand watering or irrigating the plantations in these areas. Many earthen dams, artificial barrages, multipurpose dams with small and big reservoirs have also been constructed recently for augmenting irrigation facilities in Kandi area. Kandi Canal has also been constructed and second phase of the project is in progress. Moreover there are small pipe line projects linked with Kandi Canal.

Kandi Canal has been constructed along with Shiwaliks, starting from Talwara in Dasuya Forest Division and it has reached upto Garhshankar. *Shah Nehar* originate from Talwara and covers plain areas of Mukerian.

Various dams/ponds constructed in the areas of different divisions are as under: -

Division	Year	Detail of Work	Name of Forest/Choe	Name of Range	Volume(M ³)/ Number
Garhshankar	2010-11	Cement Masonry Structure	Baba di choe	Mahilpur	240 M ³
-“-	-“-	-“-	Sekhowal (Sekhowal Khai choe)	Garhshankar	181.61M ³
-“-	-“-	-“-	Majhot (Garhi Choe)	Balachaur-II	160M ³
-“-	-“-	-“-	Nangal (Siaili Wali Choe)	Kathgarh-II	80M ³

Division	Year	Detail of Work	Name of Forest/Choe	Name of Range	Volume(M3)/ Number
Garhshankar	2010-11	New Pond	Maili (Baba di choe)	Mahilpur	1 No.
-“-	-“-	-“-	Sekhowal (Sekhowal Khai choe)	Garhshankar	1 No.
-“-	-“-	-“-	Majhot (Garhi Choe)	Balachaur-II	1 No.
-“-	-“-	-“-	Nangal (Siaili Wali Choe)	Kathgarh-II	1 No.
-“-	-“-	-“-	Sekhowal (Sekhowal Khai choe)	Garhshankar	2 No.
-“-	-“-	-“-	Nangal (Siaili Wali Choe)	Kathgarh	2 No.
Hoshiarpur	2008-09	Cement Massonary Structure	Uppar Dherian (Gazrarewala Choe)	Dholbaha	154.43 (1 No.)
-“-	-“-	-“-	Uppar Dherian (Chhapruwala Choe)	Dholbaha	165.90 (1 No.)
-“-	-“-	-“-	Dholbaha (Pandita wala Choe)	Dholbaha	129.37 (1 No.)
-“-	-“-	Earthan Dam	Nara (Mittiwala Choe)	Hoshiarpur	(1 No.)
-“-	2009-10	Cement Massonary Structure	Khangwari (Karahewala Choe)	Dholbaha	152(1 No.)
-“-	-“-	-“-	Gurniali (Gurniali Choe)	Haryana	151.21 (1 No.)
-“-	-“-	-“-	Janauri (Gidderawali Choe-1)	Haryana	144.19 (1 No.)
-“-	-“-	-“-	Janauri (Gidderawali Choe-2)	Haryana	146.59 (1 No.)
-“-	-“-	-“-	Manjhi (Marawali Choe)	Hoshiarpur	166.90 (1 No.)
-“-	-“-	-“-	Nara (Mittiwala Choe)	Hoshiarpur	72.47 (1 No.)
-“-	-“-	Earthan Dam	Uper Dherian (Warawala Choe)	Dholbaha	(1 No.)
-“-	-“-	-“-	Janauri (Dilhi Darwaja Choe)	Haryana	(1 No.)
Dasuya	2006-07	Cement Massonary Structure	Labhar	Talwara-I	2 No.
-“-		Pond	Chattarpur	Talwara-I	1 No.
-“-	2007-08	Cement Massonary Structure	Rampur	Badla	1 No.
		Earthan Dam	Rampur	Badla	1 No.
-“-	2008-09	Cement Massonary Structure	Rampur	Badla	3 No.
-“-	-“-	Cement Massonary Structure	Labhar	Talwara-I	1 No.
-“-	-“-	Earthan Dam	Hardo Neknama	Badla	1 No.
	-“-	Earthan Dam	Rampur	Badla	2 No.
		Pond	Dadial	Talwara-I	1 No.
-“-	2009-10	Cement Massonary Structure	Hardo Neknama	Badla	1 No.
		Earthan Dam	Hardo Neknama	Badla	1 No.

List of Perennial Choes/Khad: - List has been annexed as Annexure-I.

6. Distribution of Area

This working plan covers total government forest areas of blocks and strips falling under three territorial Forest Divisions. Details are as under: -

Strip/Block	Area of Forest Division (Ha)			
	Hoshiarpur	Dasuya	Garhshankar	Total
1) Block Forests	10186.10	2649.7	1538.3	14374.17
2) <u>Strip Forest</u>				
Roads	188.69	221.82	161.24	571.75
Rails	63.70	203.06	54.10	320.86
Canals	14.50	405.64	172.98	593.12
Drains & Bundhs	29.08	84.03	63.27	176.38
Total	10482.07	3564.32	1989.89	16036.28

Range wise Distribution of Forests is given in Table No 4, 5, & 6.

7. State of Boundaries

This working plan covers strips and block forests. Major part of the block forests were unallotted evacuee land purchased by Punjab Forest Department from Ministry of Rehabilitation, Government of India in 1961 and 1971. Ever since due emphasis is being given to demarcate and maintain the boundaries on the ground and record keeping in this respect has also been started. Therefore the State of boundaries in most of the block forests is showing progress and every year works in this direction is being done. In certain cases only external boundary of the forest has been demarcated. There has been programme of monitoring/checking of boundaries and their maintenance. Boundary registers for most of the forest ranges are being maintained. It is suggested that all the block forests should be demarcated in a time bound manner with simultaneous fixing of masonry boundary pillars and preparations of records. Land plans of the strips prepared by the respective Departments may be obtained at the earliest. The records be prepared in triplicate and kept in Range, Division and Circle Offices. In case of strip forests, the respective departments are to maintain the boundary pillars and the condition is satisfactory. To avoid legal disputes in the future, demarcation and maintenance of boundary pillars is necessary especially in the un-classed block forests. The demarcation of Block Forests by 1 mt, X 1 mt. Ditch and a multipurpose inspection path of 3 meter width all along the boundary with a particular variety of tree species on the outer side besides boundary pillars should be considered in plain block forests. The consolidation of the boundaries and mapping of the Block Forest may be carried out with the help of GIS & GPS techniques in a time bound manner. As per

government of India guidelines, boundaries of all government forests are to be digitized as early as possible. Work in this direction has already been started.

The installation and maintenance of the boundary pillars of strips is with the cooperation of the concerned departments (Railway, PWD, Irrigation etc.) as these strips belong to the concerned departments. Forest Department is entrusted with the management of these areas. There is the need to establish good understanding with the concerned department to maintain the boundary pillars regularly in order to efficiently check encroachments which constitutes not only violation of the provisions of the Indian Forest Act, 1927 and the Forest (Conservation) Act, 1980 but would also amount to contempt of Supreme Court order dated 12.12.1996 (CWP202 of 1995. T.N. Godavarman Vs Union of India).

In the case of Biris/Block forests, which is under the control of the Forest Department, the repairs, re-demarcation, checking and maintenance of the boundary pillars needs to be done as explained in the Miscellaneous chapter in this current working plan.

8. Legal position

The ownership of linear forests along railway lines is vested with the Ministry of Railways Govt. of India and their management was transferred to the Forest Department vide letter No. 5002-D-51/6264 dated 15.11.1951. Since then, these areas are being managed by the Punjab Forest Department for afforestation purpose. Most of the road and canal strips in the state were transferred to the Forest Department vide Punjab Govt. Notification No. 6058-Ft-II/3305-3307 dated 13th December, 1957. National Highway No IA (Jalandhar-Pathankot Road) including Tanda bye-pass vests with Govt. of India. The areas along these strips were declared as Protected Forests under Chapter-IV of Indian Forest Act, 1927 vide Punjab Govt., Notification NO. 422-Ft-58/1195 dated 3.5.1958. Vide this notification all land on either side of P.W.D., Roads, Canals, branches, distributaries, minors, escapes, bundhs etc. of the P.W.D B&R and Irrigation departments stands transferred to the Forest Department for purposes of management. The drains are controlled by the Drainage Branch of Irrigation Department, Punjab and their boundaries are vague. Similarly, Zila Parishad roads are still under the control of that Department. It may be mentioned here that formal agreement for distribution of revenue obtained through felling of trees from strip forests vis a vis various owners like P.W.D., Irrigation etc, has not been worked out so far except for Railway strips.

Out of total area of block, forests, 9468.90 Ha. has been declared as protected forests under section 29 of the Indian Forest Act, whereas 4905.27 Ha. area is still managed as un-

classed forests. The erstwhile evacuee properties in blocks in different villages which were purchased by Punjab Forest Department have been either mostly notified as protected forest or some block properties remained as un-classed forest. These un-classed forests should be declared as Protected Forests in a time bound schedule on priority basis. Legal classification and distribution of forest area is given in **Table No.7**. Reference to notification is given in the Area Statement in **Table No. 15,16 & 17**. Indian Forest Act 1927, Forest Conservation Act, 1980, Punjab Public Premises and Land (Eviction and Rent Recovery) Act, 1973 besides General Acts, such as Indian Penal Code, Criminal Procedure Code are applicable in safe guarding these forest areas. Any petty offence under the Indian Forest Act, 1927 may be compounded vide the rates issued by Principal Chief Conservator of Forests Punjab from the time to time.

In case of forest areas diverted for different developmental works, the legal status will remain as forest only and these areas shall remain as forests in different working circle to which they belong.

Chemical Analysis of Clay Fraction -I

Depth (inches)	Exchange Capacity m.e.per 100 gm of Clay	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	Si/ Ko _{2 23}	SiO/ AiO _{2 23}
0-6	65.64	55.66	24.3	11.2.	2.9	3.9
6-30	63.55	54.40	18.9	13.6	3.3	4.9
30-60	73.36	56.60	10.01	14.4	3.4	5.2
60-90	70.84	56.0	18.12	15.8	3.3	5.1
90-120	69.95	55.9	21.5	12.2	3.2	4.4

Analytical result-II

Depth inches	Texture	SiO (%)	Al O (%)	Fe O (%)	Ca O (%)	Mgo (%)	P O (%)	K O (%)	Mn (%)	Ca Co (%)	Org.C (%)	Nitrogen (%)	C/N (%)	pH	Ex cap	Total ex. bases
0-6	Clay	75	11.8	8.2	0.6	0.5	0.1	0.6	0.1	0.17	0.51	0.072	7.1	5.9	9.5	8.5
06-30	Clay	73	11.9	3.9	0.78	0.58	0.1	0.66	0.1	0.17	0.06	5.06	5.9	7.1	9.7	9.1
30-60	Clay	67	13	11	0.79	0.59	0.1	0.32	0.1	0.18	0.31	0.05	5.9	7.3	10.1	9.6
60-90	Clay loam	67	13	9.2	0.8	0.62	0.1	0.84	0.1	0.2	0.26	0.04	6.3	8.5	8.1	7.9
90-120	Clay loam	68	12.7	9	1.24	0.53	0.1	0.8	0.1	2	0.25	0.04	6.2	8.8	8.9	7.8

Table No. 1
Monthly Rainfall Data (mm) record at Dasuya Station

Month	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Jan	-	-	90.8	66.5	14	2	16	9	9	-	132
Feb	7.12	77.7	27.5	94.7	7	142.52	7	18	4	-	2
Mar	-	76	-	53.5	58	82.4	-	10	5	-	16
Apr	11.2	10.2	17.4	8	-	4	23.9	30	-	-	-
May	12.2	-	86.5	13.5	27.1	26.2	10	4	33	-	-
Jun	26.8	34	72.9	39	31.3	21.7	255.7	6	27	132	-
Jul	43.6	256.4	134.3	291	175.7	215.7	134	291	376	125	-
Aug	59.8	548.6	88	46	187.7	67	553	241	245	129	-
Sep	88.8	164.8	3.5	133.5	73.6	32.2	59.5	90	77	202	-
Oct	43.2	-	140.8	-	5	-	23	4	54	-	-
Nov	-	2	2	-	6	2	-	13	3	-	-
Dec	-	10.5	10	-	8	11.2	1	-	-	8	-
Total	292.72	1180.2	673.7	745.7	593.4	606.92	1083.1	716	833	596	150

Table No. 2
Monthly Rainfall Data (mm) recorded at Hoshiarpur Station

Month	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
January	5.5	9.7	58.2	49.4	10.5	0.3	15.2	12.6	4.3	4.1	98.2
February	6.0	70.2	13.8	72.8	2.3	64.2	7.7	20.7	14.8	47.0	3.8
March	3.2	45.3	-	37.5	47.6	68.1	-	15.4	2.8	9.0	-
April	9.1	9.1	11.0	7.3	0.9	6.7	26.7	23.9	1.4	12.7	-
May	26.7	1.8	42.9	13.1	25.0	14.9	7.8	3.5	19.3	10.7	-
June	35.1	53.7	88.7	31.7	28.6	32.7	182.7	9.0	35.5	143.4	-
July	59.1	173.2	110.6	281.1	149.0	160.8	94.0	321.5	226.8	153.9	-
August	91.2	266.5	95.7	95.0	149.2	80.2	425.4	198.9	165.2	177.6	-
September	107.6	128.1	1.9	137.4	83.2	28.1	42.2	67.1	109.4	124.0	-
October	15.7	-	80.0	-	3.7	-	29.3	4.5	31.1	-	-
November	-	4.2	1.0	-	2.2	1.7	-	19.4	-	-	-
December	-	7.6	10.3	-	9.6	15.7	-	-	26.4	5.9	-
Total	359.2	769.4	514.1	725.3	511.8	473.4	831.2	668.6	679.0	688.3	-

Table No. 3
Monthly Rainfall Data (mm) recorded at Garhshankar (Ballowal Sounkri)

Month	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Jan	21.6	30.5	117.5	46.8	29.8	1.2	21.2	17.5	6.8	33.2
Feb	24.5	49.0	6.7	73.6	0.0	112.8	7.4	16.2	19.4	56.2
Mar	13.0	20.5	0.0	37.2	66.6	105.6	0.0	15.9	2.7	21.6
Apr	5.7	21.1	36.4	8.0	4.0	47.8	28.2	22.2	0	14.3
May	30.2	1.3	10.3	29.3	62.1	11.2	31.4	13.9	30.1	41.5
Jun	111.3	108.4	42.0	51.5	22.5	131.4	435.0	27	79.9	303.0
Jul	66.1	295.5	178.0	241.1	167.2	209.8	75.4	190	346.9	139.1
Aug	212.4	145.7	354.3	159.3	305.6	152.3	294.5	201.8	171	492.2
Sep	298.4	67.2	10.6	115.3	80.4	154.4	256.5	86.6	219.4	152.7
Oct	31.0	0.0	229.0	0.0	5.5	0.0	41.0	11.2	45.5	0.0
Nov	0.0	7.8	1.3	0.0	5.0	4.2	0.5	14.3	0	0.0
Dec	2.3	6.6	20.2	0.0	14.3	13.2	0.8	0	61.4	30.1
Total	816.5	753.6	1006.3	762.1	763.0	943.9	1191.9	616.6	983.1	1283.9

Table No. 4
Garhshankar Forest Division
Range wise distribution of lengths and areas of Strip and Block Forests

Type of Forest area	Total		Kathgarh		Balachaur		Garhshankar		Mahilpur	
	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)
Strips forests										
Rail	50.000	54.10	-	-	-	-	50.000	54.10	-	-
S.H Roads	23.800 20.23	108.14	17.000	19.00	28.400	34.98	26.800	33.84	11.600	-
M.D Roads	33.000	41.10	-	-	-	-	33.000	41.10	-	-
Link Roads	13.000 2.40	12.00	6.000	6.00	3.000	3.60	-	-	4.000	-
Canals	71.674 73.20	172.98	17.690	28.31	10.980	30.25	24.704	41.22	18.300	-
Escapes	7.625	10.20	-	-	7.625	10.28	-	-	-	-
Bundhs	42.700	53.07	18.300	18.30	24.400	34.77	-	-	-	-
Total	326.799	451.59	58.990	71.61	74.405	113.80	109.504	170.26	33.900	95.92
B. Block Forests:	138.80	1538.30	-	763.80	-	440.50	-	195.20	-	-
G. Total	326.799	1989.89	58.990	835.41	74.405	554.30	134.504	365.46	33.900	234.72

Table No. 5
Hoshiarpur Forest Division
Range wise distribution of lengths and areas of Strip and Block Forests

Type of Forest area	Total		Hoshiarpur		Haryana		Dholbaha		Mehngrowal	
	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)
Strips forests										
Rail	28.4	63.70	28.4	63.70	-	-	-	-	-	-
S.H Roads	106.300	108.17	52.300	56.47	54.00	51.70	-	-	-	-
M.D Roads	47.600	32.86	37.800	25.02	9.800	7.84	-	-	-	-
Link Roads	63.200	47.66	11.00	8.80	42.200	35.86	10.000	3.00	-	-
Canals	10.370	14.50	10.370	14.50	-	-	-	-	-	-
Escapes	-	-	-	-	-	-	-	-	-	-
Bundhs	38.430	29.08	-	-	27.145	18.94	11.285	10.14	-	-
Total	294.3	295.97	139.87	168.49	133.145	114.34	21.285	13.14	-	-
B. Block Forests:	-	10186.10	-	6394.80	-	531.60	-	2168.20	-	1091.50
G. Total	294.3	10482.07	139.87	6563.29	133.145	645.94	21.285	2181.34	-	1091.50

Table No. 6
Dasuya Forest Division
Range wise distribution of lengths and areas of Strip an Block Forests

Type of Forest area	Total		Dasuya		Mukerian		Talwara		Badla	
	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)	Length (kms)	Area (Ha)
Strips Forests:-										
Rail	150.00	203.06	72.00	76.30	60.00	105.16	18.00	21.60	-	-
N.H Roads	55.900	99.07	41.000	79.50	14.900	19.57	-	-	-	-
S.H Roads	14.400	13.44	14.400	13.44	-	-	-	-	-	-
M.D Roads	59.000	59.71	13.000	18.80	27.400	28.11	9.600	4.80	9.000	8.00
Link Roads	76.000	49.6	37.000	23.60	25.000	18.40	8.000	3.20	6.000	2.40
Canals	155.385	405.64	-	-	155.385	405.64	-	-	-	-
Escapes	22.875	10.51	22.875	10.51	-	-	-	-	-	-
Bundhs	54.595	73.52	40.260	60.65	-	-	-	-	14.335	12.87
Total	588.55	914.55	240.535	282.50	283.00	576.88	26.600	31.60	29.335	23.27
B. Block Forests:	-	2649.77	-	1839.97	-	322.88	-	584.60	-	225.30
G. Total	588.55	3564.32	240.535	2122.77	283.00	899.76	26.600	616.20	29.335	278.57

9. Rights & Concessions

Except for the right of passage and water there are no other private rights in whole of the area except Shahzadpur forest of Hariana Range, where one sixteenth of revenue from mango orchards has to go to the villagers. This orchard has been come very old and there is no revenue on account of fruit as the trees not been bearing fruit for the past many years.

The Punjab Govt, issued guidelines for Joint Forest Management in Kandi Forest areas vide Notification No. 46/242/99-Ft-III/3613 dated: 06.09.2001 which is applicable to Reserve, Protected and Unclassed forests of Kandi area. These guidelines provide for some concessions in the form of benefit sharing from these Govt, Forests. These concessions include lease of all grasses such as Bhabbar, Kana etc, free cost and 25% of the total revenue obtained from the lots transferred by Punjab Forest Department to Punjab State Forest Development Corporation. The Punjab Government vide notification no. 29/25/98-FT-III/14024 Chandigarh dated 3/11/2000 notified Punjab Apportionment of Trees Rules 2000 according to which certain percentage of sale value of the trees on various roads strips will be shared with the person who owned land under cultivation adjoining the road strips. These Notifications are annexed as Annexure II & III.

10 Width of strips

The width of the strips varies. Some strips can accommodate only one row of trees while others can accommodate varying number of rows up to 5 and more. According to the width of strips available for plantation, the strips have been classified into following categories:

Broad	:	Where 5 or more rows of trees can be planted.
Narrow	:	Where two rows of trees can be planted or exist
Very Narrow	:	Where one row of trees can be planted or exists.

Table No 8, 9 & 10 give the width of strips and their distribution. Most of the strips are narrow or very narrow capable of bearing only one to two rows of trees. The broad strips are mainly along bundhs.

11. Encroachments:-

Cases of illegal encroachments of both strips and block forests are very common. Along some railway lines, roads and canals etc. forest land has been illegally encroached by the owners of adjoining fields and others. The encroachment problem is very serious on Canal strips and Bundhs. It is desirable to check the boundary of the strips at the spot in the light of the land plans prepared by different departments and pucca boundary pillars be got erected, wherever missing, if not existing at present. The strips are included in the planting programme and the last line of plants should be planted just on the boundary so that further encroachment can be prevented. Encroachment in block forest is a greater threat and requires very honest efforts by all the concerned to combat this menace. It is desirable that the boundaries of the block forests be got demarcated and pucca boundary pillars be erected wherever there is no dispute. As most of the block forests are burdened with the litigation under Punjab Public Premises and Land (Eviction and Rent Recovery) Act, 1973, Punjab Package Deal Property Act, 1976 etc. Concerted efforts are required to pursue these cases and immediately remove encroachments as and when the eviction orders are passed by competent authorities. *Khasra Girdawaries* should be got transferred in the name of Forest Department in the case of all the notified forests in order to prevent further illegal occupation and litigation in the garb of *Khasra Girdawari* entries. In the case of all the block forests the name of Punjab Forest Department has to be got entered in the book of rights (*Intikal*). Good work has been done in Hoshiarpur Forest Division in the recent past to remove illegal encroachment from various block forests in many villages.

As per orders of the Hon'ble High Court in case of CWP No.4559 of 2007, a special campaign has been launched to evict encroachments along highways.

Table No. 7
Abstract of Range wise list of the Block Forests &
Legal Classification and Distribution of Block Forest Area Range wise

Division	Range	Protected Forests		Un- classed forests		Total	
		No	Area (hec)	No	Area (hec)	No	Area (hec)
Garhshankar	Garhshankar	6	194.00	1	1.20	7	195.20
	Balachaur	5	337.70	4	102.80	9	440.50
	Kathgarh	12	648.00	7	115.80	19	763.80
	Mahilpur	2	138.80	-	-	2	138.80
	Total	25	1318.50	12	219.80	37	1538.30
Hoshiarpur	Hoshiarpur	19	4086.00	3	2308.80	22	6394.80
	Hariana	15	450.30	3	81.30	18	531.60
	Dholbaha	6	2005.60	3	162.60	9	2168.20
	Mehangrowal	5	1091.50	-	-	5	1091.50
	Total	45	7633.40	9	2552.70	54	10186.10
Dasuya	Dasuya	3	29.90	25	1809.97	28	-
	Mukerian	-	-	13	322.88	13	322.8
	Badla	11	225.30	-	-	11	225.30
	Sansarpur (Talwara)	1	261.80	-	-	1	261.80
	Total	15	517.00	38	2132.77	53	2649.77
	G.Total	85	9468.90	59	4905.27	144	14374.17

Table No. 8
Garhshankar forest Division
Statement showing detail of Range wise distribution of strip of forest areas

S. No	Name of the Areas	Total Km	Length	Kathgarh	Balachaur	Garhshankar	Mahilpur	Av. Width L.site R/Site	
1	Rails Phagwara-Nawanshahar-Jajjon Rly. line.	42-67	25.000	-	-	42-67	-	Moderate/ Narrow	Narrow
	Total		25.000	-	-	25.000	-		
2	ROADS Ropar-Hoshiarpur Rd	4-78/6	74.600	4.21	21-40/2	40/2-67	67-78/6	Narrow	Narrow
3	S.H. 24Chandigarh-JalandharRoad	67/4-76/6	9.200	-	67/4-76/6	-	-	Narrow	Narrow
	Total		83.800	17.000	28.400	26.800	11.600		
4	M.D.ROADS Garhshankar-Nurpur-	0-22	22.000	-	-	0-22	-	Narrow	Narrow
5	bediRoad.	2-7	5.000	-	-	2-7	-	Narrow	Narrow
6	Garhshankar-Nawanshahar Garhshankar-Banga Road	0-6	6.000	-	-	0-6	-	Narrow	Narrow
	Total		33.000			33.000			

S. No	Name of the Areas	Total Km	Length	Kathgarh	Balachaur	G arhshankar	Mahilpur	Av. Width L.site R/Site	
LINK ROADS									
7	Kathgarh-Rattewal Link Road	0-6	6.000	0-6	-	-	-	Narrow	Narrow
8	Balachaur-Garhi Link	0-3	3.000	-	0-3	-	-	Narrow	Narrow
9	Mahilpur-Maily Link	5-9	4.000	-	-	-	5-9	V.Narrow	V. Narrow
Total			13.000	6.000	3.000		4.000		
G.Total			129.800	23.000	31.400	59.800	15.500		
CANAL'S									
10	B.D. Canals	0-94	28.670	0-58	58.94	-	-	Broad	V. Narrow
11	Jalandhar Branch	40-160	36.600	-	-	40-100	100-160	Moderate	Narrow
12	Mehendipur Disty	0-1+152 mtr	0.457	-	-	0-1+152mtr	-	V. Narrow	V. Narrow
13	Denowal Disty	0-17+152	5.337	-	-	17+152mtr	-	V. Narrow	V. Narrow
14	Mohanwal Disty	0-2	0.610	-	-	0-2	-	Narrow -do-	Narrow -do-
Total			71.674	17.690	10.980	24.704	18.300		
ESCAPE'S									
15	Mehmoodpur Drain	0-25	7.625	-	0-25	-	-	Moderate	V. Narrow
Total			7.625		7.625				
BUNDHS									
16	Sutlej Bandh (Lower)	0-65	19.825	0-30	30-65	-	-	Narrow	Narrow
17	Sutlej Link Bandh (upper)	0-10	3.050	0-10	-	-	-	Narrow	Narrow
18	Chahal Choe Bandh	0-10	3.050	0-10	-	-	-	Narrow	Narrow
19	Kathgarh Choe Bandh	0-10	3.050	0-10	-	-	-	Narrow	Narrow
20	Balachaur Choe Bandh	0-10	3.050	-	0-10	-	-	Narrow	Narrow
21	Rakran Choe Bandh	0-10	3.050	-	0-10	-	-	Moderate	Moderate
22	Lohet Choe Bandh	0-10	3.050	-	0-10	-	-	Narrow	Narrow
23	Sudho Majra Choe Bandh	0-15	4.575	-	0-15	-	-	Moderate	Moderate
Total		42.700	18.300	32.025					
Escape+ Bandhs		50.325	18.300	32.025					
G:Total									

Table No. 9
Hoshiarpur forest Division
Statement showing detail of Range wise distribution of strip of forest areas

S. No	Name of the Areas	Total Km	Length	Hoshiarpur	Haryana	Dholbaha	Mehngrowal	Av. Width L/side R/side	
1	Rails Jalandhar Hoshiarpur Rly. line.	24/8-39	14.200	24/8-39	-	-	-	Broad	Broad
Total			14.200	14.200					

S. No	Name of the Areas	Total Km	Length	Hoshiarpur	Haryana	Dholbaha	Mehngrowal	Av. Width L/side	R/side
	<u>S.H ROADS</u>								
2	Ropar-Hoshiarpur Rd	78/6-91	12.400	78/6-91	-	-	-		
3	S.H. 24 Hoshiarpur	2-35	33.000	-	2.35	-	-	V.Narrow	Narrow
4	Dasuya Road Hoshiarpur	3-24	21.00	-	3.24	-	-	Narrow	Narrow
5	Tanda Road Jalandhar Hoshiarpur Road	24/8-39	14.200	24/8-39	-	-	-	Moderate	Narrow
6	Jalandhar Hoshiarpur rd (abandoned)	27/4-29/7	2.300	27/4-29/7	-	-	-	Narrow	Narrow
7	Jalandhar Bharwain Road	41-59/4	18.400	41.59/4	-	-	-	Narrow	Narrow
8	Hoshiarpur Bye Pass	45-50	5.000	45.50	-	-	-	Moderate	Moderate
	Total		106.300	52.300	54.000	-	-		
	<u>M.D.ROADS</u>								
9	Hoshiarpur-Phagwara Rd.		2-22	20.000	-	-	-	Narrow	Narrow
10	Hoshiarpur-Una Road		1-18/8	17/800	7.00	-	-	V.Narrow	V.Narrow
11	Ballowal-Bhogpur		0-9/8	9-800	308	9.8	-	Narrow	Narrow
	Total			47.600	37.800	9.800	-		
	<u>Link Roads</u>								
12	Hoshiarpur-Mehngrowal Rd.		1-12	11.000	1-12	-	-	V.Narrow	V.Narrow
13	Haryana-Dholbaha Rd.		0-14	14.000	-	0-12	12-14	Narrow	Narrow
14	Haryana-Shamchurasi Rd.		0-17	17.000	-	0-17	-	V.Narrow	V.Narrow
15	Tanda-Dholbaha Road.		7-14/2	7.200	-	7-14/2	-	Narrow	Narrow
16	Garhshankar-Darapur Road		0-6	6.000	-	0-6	-	V.Narrow	V.Narrow
17	Dholbaha-Manhota Road		2-10	8.000	-	-	2-10	V.Narrow	V.Narrow
	Total			63.200	11.000	42.200	10.000		
	G.Total			217.100	101.100	106.00	10.000		
	<u>Canals</u>								
18	Jalandhar Branch canal		160-194	10.370	160-194	-	-	Moderate	Moderate
	Total			10.370	10.370	-	-		

S. No	Name of the Areas	Total Km	Length	Hoshiarpur	Haryana	Dholbaha	Mehngrowal	Av. Width L/side	R/side
19	Escape & Bundh Langerpur Bandh		77-114	11.285	-	-	77.114	Broad	Moderate
20	Sherpur Bundh R/side		95-162	20.435	-	95.162	-	Broad	Moderate
21	Sher Bundh L/side		140-162	6.710	-	140.162	-	Moderate	Broad
	Total			38.430	-	27.145	11.285		
	G.Total			280.100	125.670	133.145	21.285		

Table No. 10
Dasuya forest Division
Statement showing detail of Range wise distribution of strip of forest areas

S. No	Name of the Areas	Total Km	Length	Dasuya	Mukerian	Talwara	Badla	Av. Width L/side	R/side
1	Rails Jalandhar Pathankot	34-87/4	53.400	34-70	70-87/4	-	-	Moderate	Moderate
2	Railway. line. Mukerian- Talwara Rly line	2-24	22.000	-	2-15	15-24	-	Moderate	Moderate
	Total		75.400	36.000	30.400	9.000	-		
	N.H ROADS								
3	Jalandhar-Pathankot	34-84/9	50.900	34-70	70-84/9	-	-	Moderate	Moderate
4	N.H-1A Road Tanda Bye pass	37-42	5.000	37-42	-	-	-	Moderate	Moderate
	Total		55.900	41.000	14.900	-	-		
	S.H ROADS								
5	Hoshiarpur-Dasuya Road	35-41/4	6.400	35-41/4	-	-	-	V.Narrow	V.Narrow
6	Hoshiarpur-Tanda Road	24-32	8.000	24-32	-	-	-	Narrow	Narrow
	Total		14.400	14.400	-	-	-		
	M.D.ROADS								
7	Tanda-Begowal-Shri Hargobindpur Rd.	0-13	13.000	0-13	-	-	-	Moderate	Moderate
8	Mukerian-Talwara Road	0-27	27.000	-	0-17/4	17/4-27	-	Narrow	Narrow
9	Dasuya-Hazipur Road	0-19	19.000	-	9-19	-	0-9	V.Narrow	V.Narrow
	Total		59.000	13.000	27.400	9.600	9.000		
	Link ROADS								
10	Tanda-Gardhiwal Link Road	0-7	7.000	0-7	-	-	-	V.Narrow	V.Narrow
11	Dasuya-Maini Link Road	0-15	15.000	0-15	-	-	-	V.Narrow	V.Narrow
12	Maini-Pacca Pull Link Road	0-2	2.000	0-2	-	-	-	V.Narrow	V.Narrow
13	Tanda-Dholbaha Link Road	0-7	7.000	0-7	-	-	-	V.Narrow	V.Narrow
14	Dasuya-Budhubarkat Link Road	0-6	6.000	0-6	-	-	-	V.Narrow	V.Narrow

CHAPTER –II THE FORESTS

12. Composition & condition of the Crop.

Vegetation cover over the tract has been described by various people like Tailor (1934-36) Hoon (1939) etc. For the purpose of this working plan. Revised Classification of Forests by Champion & Seth is adopted. The forest types found are 5B/C2 (Northern dry mixed deciduous forests) which deteriorates at certain places into the category 5B/DS2(dry deciduous Scrub) Khair Sissoo Forests in foot hills, Bela and Mand areas (type 5/IS2) and Chil Forest on the higher reaches of Shivalik conforming to the forest type 9C/IA (lower Shivalik Chil Pine Forests). Besides this various grasses form part of the ground flora. The description of vegetation is given below: -

The main tree species found are khair (*Acacia catechu*), Shisham (*Dalbergia sissoo*), Kikar (*Acacia nilotica*), Mango (*Mangifera indica*) and Chil (*Pinus roxburghii*). Other important tree species are Simal (*Bombax ceiba*), Amla (*Emblica officinalis*), Rajain (*Holoptelia integrifolia*), Kembal (*Lannea coromandelica*), Tun (*Toona ciliata*), Phalahi (*Acacia modesta*), Neem (*Azadirachta indica*), Kinu (*Diospyros tomentosa*), Amaltas (*Cassia fistula*), Kangu, (*Flacourtia ramontchii*), Dhak (*Butea monosperma*), Sannan (*Ougeinia oojensis*), Wan (*Salvadora oleoides*), Beri (*Zizyphus mauritiana*), Dhaman (*Grewia oppositifolia*), Kachnar (*Bauhinia variegata*), and Chhall (*Anogeissus latifolia*) etc. Two bamboo species namely *Dendrocalamus strictus* and *D. hamiltonii* are also found in some areas of Hoshiarpur and Dasuya this Forest Division.

Main shrubs are Zizyphus numularia, Kuri (*Nyctanthes arboretristis*), Dhavi (*Woodfordia fruticosa*), Panch phulli (*Lantana camara*), Garna (*Carrissa opaca*), Mehndar (*Dodonea viscosa*), Kaner (*Nerium indicum*), Gandla (*Murraya koenigii*), hitherthar (*Opuntia dillenii*), Basuti (*Adhatoda vasica*), Satyanashi (*Xanthium spp.*), aheri AK (*Ipomoea cornea*), Ak (*Calotropis procera*), Bhang (*Cannabis sativa*) etc.

The main climbers found are Taur (*Bauhinia vahlii*), Giloe (*Tinospora malabarica*), Gauj (*Millettia auriculata*) and Daghiari (*Mimosa himalayana*).

The main grasses and weeds are Bhabbar (*Eulaliopsis binata*), Sarkanda (*Saccharum arundinaceum*), Kahi (*Saccharum spontaneum*), Sarala (*Heteropogon contortis*), Dib (*Typha elephantiana*), Khabbal (*Cynodon dactylon*), Bhakra (*Tribulus terrestris*), Bathu (*Chenopodium album*), Kandiyari (*Solanum xanthocarpum*) etc.

Lantana (*Lantana camara*) management is a critical issue which needs attention in block forest areas of this working plan. Being an invasive alien weed which has covered very large tracts of Shiwalik in last few decades the problem needs to be addressed urgently.

List of prominent trees, shrubs and herbs and grasses of the working plan area is annexed as Annexure-IV.

13. Growing stock

As far as the strip forests are concerned, enumeration records prepared by the Territorial Division were taken into account. **Table No. 11-13** gives the picture of the trees arranged class wise. As far as the block forests are concerned, the growing stock has been enumerated by the line intercept method. The trees were uneven aged and mixed, If one were to plot the number of stems for the mean breast height of all age classes up to rotation age, the curve will be in the shape of reversed 'J' F.D. Liocourt's formula has been taken into account for estimating the growing stock. If 'a' is the number of stems in the smallest class, 'n' is the number of classes and 'd' is the co-efficient of diminution, then

$$\text{Log } d = \frac{\text{Log } a}{n-1}$$

So without going into the details of Liocourt's theory we were able to ascertain the rough estimate of the stock. **Table No. 11, 12 & 13** show the abstract of growing stock in each division.

The total growing stock of the area of the working plan in terms of number of trees is 31,44,052 (768721.95 M³) Block forests account for 91.55% of the total growing stock in number of trees and 81.53% of the total volume and strip forest account for 8.42% of the number of trees and 18.46% of the volume. The Road working circle tops the list as far as the number of trees are concerned among all the strip forests with 142738 trees followed by Canal working circle having 87542 trees. The road working circle spread over 571.7 Ha. over a length of 511 Kms is having about 1.6 times more the number of trees compared to Canal working circle with an area of 591 ha spread over 237.3 Kms. The road working circle is better stocked compared to all the working circles constituted in strip forests. This gives an indication that areas in the other working circles of strip forests are not brought under afforestation on par with the road strips. This fact substantiate number of gaps in the strips along canal, bundhs and rail strips which are either lying vacant or predominantly under encroachment and there is no scope of afforesting these areas under illegal occupation without removing the encroachments. It has been observed that on canal, bundhs and rail strips lots of areas are under encroachments .Special efforts are required to remove these encroachments so that these areas may be stocked properly. There are 265468 trees on all the strips whose cubic contents amount to 141981.75 M³. The average cubic contents of each tree on the strips 0.53 M³ while that of block forests is 0.217 M³. It is very clear

from this that the strip forests are having either mature crop or the crop is nearing maturity while the crop in the block forests is mixed belonging new regeneration to middle age. In Hoshiarpur Forest Division the block forests are recorded to have substantial pole crop indicating good amount of successful re-generation has taken place. Therefore it is very necessary that the strip forests be planted up on priority basis so that there are no perennial gaps leading to open canopy when the mature trees either face natural death or harvested at rotation period. There is urgent need for improving the growing stock genetically in both strip and block forests by under taking planting of better clones of Shisham, Khair, Rajain & other species that are natural to the forest. Vigorously growing planting stock may be raised by means of progressive selection. Seeds from plus trees identified in the seed stands should be made mandatory for obtaining improvements in the growing stock. Improved technologies such as clonal nurseries, plants raised in root trainers may be used for better survival and plantation stocks.

Growing stock of bamboo and its working has been given in NTFP working circle.

14. Injuries to which the Crop is liable

(i) Grazing and Browsing:-

Grazing of cattle is a very serious problem in the Kandi area of Punjab because natural regeneration of seed origin, coppice and root suckers are very badly effected in the forest areas, Both the strip forests as well as block forests, especially plantations, are affected by this problem, Grazing/Browsing by domestic & stray cattle, goats, sheep etc is found almost every where in the forest areas. The problem has increased substantially because of phenomenal increase in the number of permanent settlements of Gujjar Community in the plains adjoining forest areas. The cattle population also increases many fold during winter because of migration of cattle, goat, sheep etc, from the adjoining hill state of Himachal Pradesh. In order to tackle this problem effectively all the concerned i.e. villagers, cattle owners should be educated about the menace of grazing and the ill effects of the same. A combination of Social fencing, trenching and fencing on the outer boundaries of the plantations in forests may be adopted to minimize the incidence of grazing. Strict vigil both in the morning as well as evening by the field staff and the villagers when the movement of the cattle is highest is also suggested. There are no cattle pounds in operation at present in these areas Cattle pounds may be revised under the provisions of Cattle Trespassers Act. 1871. Grazing if allowed be controlled as per scientific range management.

(ii) Lopping: - Fodder trees like chall, dhak, sannan etc. are lopped for fodder by local people lopping of fuel wood of shisham is also common. Owing to repeated lopping Shisham at some places attained bushy nature.

(iii) **Fire:** - Forest fires are dangerous both for the forest and wild life. During the dry and hot season, fires break out in block forests where kana, Kahi, Bhabbar, other grasses, dry leaves and twigs of Lantana and other weeds are abundant. The problem of Forest fires becomes grave when pre-monsoon showers are either delayed or absent. Fires spread from the adjoining agricultural fields into the strips when crop residues are burnt in the fields at least twice or thrice in a year causing damage to the plantations or existing crops in the strips. In block forests fire prevention is undertaken by clearance of fire lines on the ridges along the inter-state boundaries and control burning during winter. It is observed that most of the forest fires spread from adjoining Himachal areas which are rich in Chil Pine Forest, in which the fire occurrence is more prevalent. In block forests fire occurs whenever some unscrupulous passers-by throw lighted butt of Cigarette/Bidi unintentionally, or putting fire in the forests intentionally for getting quick sprouting of new flush of grass, bhabbar or for collecting honey. Whenever fire breaks out in the forest, it is controlled by traditional way of fire beating and counter fire. No modern fire fighting techniques with the help of modern tools are employed to control forest fires. It is felt that maximum public awareness may be created regarding the destruction caused as a result of forest and consequent environmental pollution. Training of field staff and others engaged in fire prevention and control in modern fire fighting techniques with improved tools is required. In each village a team of 25 volunteers among majdoors whose services can be used for this purpose may be identified and trained. The life of the people involved in fire fighting i.e. both field staff and majdoors be insured as a precaution. All kinds of debris of forests origin, as far as possible, may be disposed off well before the onset of fire season. In Block Forests, Maintenance of the fire lines is utmost importance besides creation of new fire lines in vulnerable areas. Plugging of all possible roads, inspection paths, compartment boundaries before the fire season may be specially helpful in prevention of spreading of fire, Joint Forest Management Committee may also be given necessary inputs regarding fire fighting. In different block forests for which the working plan is prepared forest fires occurred around 193 times between 2002-03 to 2011-12 in which 2448 Ha. area is affected. It is worthwhile to mention here that fire in many areas is repeated after a gap of 3-4 years. This calls for taking effective measures to check and prevent the forest fires. Senior officers of the department may review preparedness of field staff to prevent and control forest fires during their visits before the onset of fire season and during the summer months. From this year onwards, GPS fire alerts are being transmitted to the DFOs directly by the FSI. This technology if followed strictly can bring a change in fire management.

(iv) **Military Exercises:** - There is a field firing Range in Hoshiarpur Forest Division in villages Dada, Saleran and Manjhi. In the past sparks of fire generated at the time of Military

exercises also cause forest fires especially during summer months. Natural regeneration is also affected because of large scale movements of heavy vehicles, tanks and other artillery weapons. Govt. of India has given permission for 15 years for firing range on certain conditions vide letter No.8-58/1998/FC Dated 6/9/2005. Attempts are being made to follow the conditions strictly, so that there is least disturbance due to these practices. It is also mentioned that in case of any damage due to these exercises Ministry of Defence will compensate the damage. These exercises are not allowed during fire season.

(v) **Frost:** - Adjective frost and pool frost are common. The survival of Simbal, Mango, kikar and other frost tender species in young plantations are affected by frost to a great extent while damage to the trees of these species is lesser. However, the effect of frost during drought conditions is very severe resulting in large scale drying up of aged mango trees also. Artificial watering wherever possible can help minimize damage on account of frost. It has been observed that the survival of young plantations of Rajain are also affected negatively by frost and many casualties were also seen in some recent plantations. Frost tender species may be covered with locally available grasses to protect them from frost damage.

(vi) **Drought:** - Absence of rains, scanty rainfall, less number of rainy days etc. result in drought in these areas which some times persist for very long periods and is a recurring feature in this part of Punjab. As the soil being well drained and having very low capacity to retain moisture, small spells of drought or late arrivals of monsoon affect the growth of young plantations badly. Where ever possible irrigated plantations may be raised or life saving irrigation may be provided for rain fed plantations.

(vii) **Floods:** - Flash-floods is a common feature and the damage caused is extensive in the river bank and outer river bank areas. Stream bank protection along drainage lines is very much required. Extensive soil conservation works of vegetative nature and engineering structures are recommended in water sheds so that maximum rain water can be retained for longer times for allowing recharge of ground water table and prevention of flash floods besides other direct and indirect benefits of conservation of soil and moisture. Newly reclaimed areas within the high and low flood zones may be taken up for plantation after taking suitable precautions in terms of soil conservation works for affording better protection of the same.

(viii) **Wild Animals, Birds and Rodents:** - Wild Boar, porcupine spoil the artificial planting extensively, browsing by Neel Gai and Sambar also cause damage to some extent. Padding of plants with thorny bushes is found to be helpful in controlling Wild Boar and Porcupine damage

and round fencing of seedlings of mango, dhrek, amla etc., is found to be effective against browsing. Though there is no much damage reported because of rodents, these are found to cause some damage to the roots of plants in few plantations as a result of extensive burrowing. Birds help in natural regeneration of plants by aiding in dispersal of seeds of many species besides lantana which is basically a weed having some potential for soil stabilization.

(ix) **Insects & Fungi:** - White Ants attack is found to cause damage of young seedlings of almost all species. Witch's broom disease causes damage to Khair. Fungus Pathogen ganoderma is causing great damage to Shisham, Khair and other leguminous tree crops. The Ganoderma attack is more severe in block forests where the density of these species is high. It has been observed that Ganoderma is surviving on the stumps of infected trees spreading the infection to the other healthy trees in the vicinity. Uprooting of all stumps infected with Ganoderma or other harmful fungi is helpful in controlling the damage to some extent. Fresh infections of Ganoderma can be prevented by digging a trench around the infected trees so that the infected roots may not come in contact with healthy ones. The trench dug around the infected trees may be treated with fungicides such as Ethyl mercuric salt, Phenyl Mercuric salt, Pentachlorophenol, Thiram. TMTD, & Dithio carbomates - Meneb - Zineb - Dithane etc,

Table No. 11
ABSTRACT OF TOTAL GROWING STOCK
GARHSHANKAR FOREST DIVISION
Class wise No. & Vol.M³

Species	No & Vol.	V	IV	III	IIA	IIB	IA	IB	Total
Euc	No	8880	11597	12670	8256	3197	1534	1346	47480
	Vol.	444	1739.55	6968.5	9081.6	6394	4295.2	4711	33633.85
Shisham	No	12298	3461	3503	1733	626	322	242	22185
	Vol.	614.9	519.15	1926.65	1906.3	1252	901.6	847	7967.6
Kikar	No	300	933	504	366	167	109	74	2453
	Vol.	15	139.95	277.2	402.6	334	305.2	259	1732.95
Khair	No	17971	18587	8045	40	0	0	0	44643
	Vol.	898.55	2788.05	4424.75	44	0	0	0	8155.35
Misc	No	26070	20106	9563	5751	1836	883	912	65121
	Vol.	1303.5	3015.9	5259.65	6326.1	3672	2472.4	3192	25241.55
Total	No	65519	54684	34285	16146	5826	2848	2574	181882
	Vol.	3275.95	8202.6	18856.8	17760.6	11652	7974.4	9009	76731.3

Table No. 12
ABSTRACT OF TOTAL GROWING STOCK
HOSHIARPUR FOREST DIVISION
Class wise No. & Vol.M³

Species	No & Vol.	Pole	V	IV	III	IIA	IIB	IA	I B	Total
Shisham	No.	-	41332	37914	25849	19389	5492	2695	212	132883
	Vol.	-	2066.6	5687.1	14216.95	21327.9	10984	7546	742	62570.55
Kikar	No.	-	7408	6699	4787	3166	436	264	39	22799
	Vol.	-	370.4	1004.85	2632.85	3482.6	872	739.2	136.5	9238.4
Euc	No.	-	37722	66912	70851	37224	10050	6005	1493	230257
	Vol.	-	1886.1	10036.8	38968.05	40946.4	20100	16814	5225.5	133976.85
Misc	No.	-	586056	295320	71557	1953	291	153	281	955611
	Vol.	-	29302.8	44298	39356.35	2148.3	582	428.4	983.5	117099.35
Chil	No.	-	1515	8479	12449	12161	3903	1908	333	40748
	Vol.	-	75.75	1271.85	6846.95	13377.1	7806	5342.4	1165.5	35885.55
Khair	No.	-	630217	461859	129385	21265	1989	658	297	1245670
	Vol.	-	31510.85	69278.85	71161.75	23391.5	3978	1842.4	1039.5	202202.85
Total	No.	-	1304250	877183	314878	95158	22161	11683	2655	2627968
	Vol.	-	65212.50	131577.45	173182.90	104673.80	44322.00	32712.40	9292.50	560973.55

The Number of poles are not included in the total No. of trees.

Table No. 13
ABSTRACT OF TOTAL GROWING STOCK
DASUYA FOREST DIVISION
Class wise No. & Vol.M³

Species	No&Vol	V	IV	III	IIA	IIB	IA	I B	Total
Shisham	No	11585	10306	8398	2142	315	202	76	33024
	Vol.	579.25	1545.90	4618.90	2356.20	630.00	565.60	266.00	10561.85
Kikar	No	4398	3893	2970	821	120	46	24	12272
	Vol.	219.90	583.95	1633.50	903.10	240.00	128.80	84.00	3793.25
Euc	No	31046	35837	46275	7913	2799	692	960	125522
	Vol.	1552.30	5375.55	25451.25	8704.30	5598.00	1937.60	3360.00	51979.00
Misc	No	36615	44191	53019	9511	3791	577	931	148635
	Vol.	1830.75	6628.65	29160.45	10462.10	7582.00	1615.60	3258.50	60538.05
Khair	No	5082	4587	4590	381	13	9	3	14665
	Vol.	254.10	688.05	2524.50	419.10	26.00	25.20	10.50	3947.45
Chill	No.	0	0	0	17	25	26	16	84
	Vol.	0.00	0.00	0.00	18.70	50.00	72.80	56.00	197.50
Total	No	88726	98814	115252	20785	7063	1552	2010	334202
	Vol.	4436.30	14822.10	63388.60	22863.50	14126.00	4345.60	7035.00	131017.10

The No. of poles are not included in the total No. of trees.

CHAPTER –III
UTILIZATION OF THE PRODUCE

15. Agricultural customs and wants of the people

Population is predominantly dependent on rain fed agriculture. Poplar and eucalyptus is grown in agro-forestry plantations on large scale. Growing of poplar is very common in Balachaur area of Garhshankar Forest Division. Now, Horticulture is being practiced side by side. There are lots of saw mills, furniture makers both small and big, which employ large chunk of work-force. Grazing is not a very predominant feature for the employment purpose but graziers from hills come with their herds in winter. The pressure on the forest is mostly from the inhabitants for the supply of small timber, fodder and fuel wood.

16. Market & Marketable Produce

Local market of wood is very well established. Main mandis of this region are Hoshiarpur, Kartarpur, Dasuya, Mukerian, Garhshankar, Saila & Balachaur. The woods which are normally traded for furniture, construction and pulp and plywood industry work are shisham, Eucalyptus and Poplars besides other species. For fire wood and katha, the woods normally traded are kikar and khair respectively. Baggar grass is basically used for Ban making, paper and pulp industries. Fodder grasses are not sold because the need for fodder is usually fulfilled from agriculture crop and grazing in the open Baggar, Munj etc. are used for paper pulp and rope. Leaves of Bauhinia vahlli and Dhak are used for making leaf plates and dishes.

17. Lines of Export

Rail and road network is extensive. Normal means of transportation are Bus, Train, Tractor, Jeep, Canter, Truck, Bullock Cart etc.

18. Method of Exploitation and their cost

Punjab State Forest Development Corporation auctions the standing trees in Government forests. Grasses were auctioned by the Forest Department earlier but now bhabber and other grasses are given free of cost to public vide Joint Forest Management Policy resolution of Punjab Government. All the operations are highly labour intensive. The Market rates of timber is very high while the royalty rates fixed by the Punjab Government are being revised. The current schedule rates of conversion and sawing fixed by the Punjab State Forest Development Corporation with effect from 1.12.1989 have been given in table I of Part II. Royalty rates of standing trees has been revised for dead & dry and green trees and royalty is calculated as per these rates.

19. Extension

It is necessary to create awareness of forests, agro forestry etc. among the public by organizing Kisan Melas, Seminars, User-Seller meets, Distribution of literature (hand bills, pamphlets, brochures etc) to general public to make them aware of techniques of raising different agricultural and tree crops simultaneously. Van Chetna Kendras be utilized to organize camps, seminars, debates, essay writing competitions, film & slide shows for school children & college students. Success stories from all over Punjab may be highlighted. For creation of awareness self help groups of the department and Youth clubs, Mahila Mandals, Nehru Yuvak Kendras, literacy mission groups etc. may be involved. This is specially important as the Non Governmental Organisations are not available in sufficient numbers in Kandi areas of Punjab. In order to encourage agro & farm forestry awareness regarding use of juvenile timbers such as Poplar, Eucalyptus, Melia species in Joinery and Furniture making, training may be imparted to the enthusiastic volunteers from among public.

20. Past and current prices: -

Generally the round timber of all sizes and lengths brought to the market by local people, is sold by weight in quintals, The people are more interested in bringing the timber to market as soon as they fell the trees without losing moisture and thus to get more weight age. However, the Punjab State Forest Development Corporation Ltd. sells the round and sawn timber by volume only. The rates of timber have increased manifold in the past. Two factors viz. increasing demand and inadequate availability of timber have played evidently big role for such price rise.

Present rates of timber overbark of various species in Balachaur and Hoshiarpur market are as under: -

Balachaur

Sr. No.	Species	Rate as per specification (Rs.)			Approx. quantity of Timber received in the mandi (Quintal)	Remarks, if any
		above	below	Fuel wood		
1	Poplar	715	650	210	Above=33.70 Below=1762.08 Fuel wood=501.60	Timber and fuel wood is green. Rate is per quintal.
2	Eucalyptus	710	610	230	Above=98.40 Below= 806.65 Fuel wood=125.35	Timber and fuel wood is green. Rate is per quintal.

Sr. No.	Speicies	Rate as per specification (Rs.)			Approx. quantity of Timber received in the mandi (Quintal)	Remarks, if any
		above	below	Fuel wood		
3	Beri	400	---	---	Above=4.00	Timber and fuel wood is green. Rate is per quintal.
4	Shisham	750	500	270	Above=70.00 Below=114.15 Fuel wood=334.75	Timber and fuel wood is green. Rate is per quintal.
5	Drek	670	400	190	Above=65.85 Below=244.67 Fuel wood=269.45	Timber and fuel wood is green. Rate is per quintal.
6	Sirs	450	---	225	Above=28.85 Fuel wood=35.45	Timber and fuel wood is green. Rate is per quintal.
7	Kanak Champa	500	---	---	Above=27.65	Timber and fuel wood is green. Rate is per quintal.
8	Su-Babul	---	350	200	Below=7.15 Fuel wood=63.20	Timber and fuel wood is green. Rate is per quintal.
9	Tun	510	---	255	Above= 46.80 Fuel wood=19.75	Timber and fuel wood is green. Rate is per quintal.
10	Mango	475	---	250	Above= 4.80 Fuel wood=5.75	Timber and fuel wood is green. Rate is per quintal.
11	Mulberry	350	---	---	Above=3.30	Timber and fuel wood is green. Rate is per quintal.
12	Kikar	460	430	310	Above=34.45 Below=14.85 Fuel wood=89.60	Timber and fuel wood is green. Rate is per quintal.
Ballies	Eucalyptus	---	280	---	Below=29.70	Ballies are green. 85 in number.

Hoshiarpur

Sr. No.	Species	Rate as per specification (Rs.)			Approx, quantity of Timber received in the mandi (give unit)	Remarks, if any
		above	below	Specify, If any other		
1	Poplar	950/-	650/-	9" to 16" = 500/-	6000 Qtl.	Less 10% of wt+ 7% commission charges in all the species. In a trolley or truck of Poplar & Eucalyptus quantity of above quality is 50%, below 30% to 35% Socta 10% to 20%. Rates are given par Qtl.
	Fuel wood	-	-	F/wood 220/- to 250/-		
2	Eucalyptus	905/-	470	>42" = 560/-	4000 Qtl.	Less 10% of wt+ 7% commission charges in all the species. In a trolley or truck of Poplar & Eucalyptus quantity of above quality is 50%, below 30% to 35% Socta 10% to 20%. Rates are given par Qtl.
	Fuel wood	-	-	F/wood 250/- to 300/-		
	Balli	-	-	Balli = 380/-		
3	Drek	-	-	12" & above Rs. 500/- to 700/-	1500 Qtl.	Less 10% of wt+ 7% commission charges in all the species. In a trolley or truck of Poplar & Eucalyptus quantity of above quality is 50%, below 30% to 35% Socta 10% to 20%. Rates are given par Qtl.
	Fuel wood	-	-	F/wood Rs. 200/- to 250/-		
4	Sirs	-	-	15" & above Rs. 450/- to 500/-	1000 Qtl.	
	Fuel wood	-	-	F/wood Rs. 280/-		
5	Shisham	850/-	500/-	Ist Class Rs. 2000/-	2000 Qtl.	Quality of Timber is very poor.
	Fuel wood	-	-	F/wood Rs. 380/- -		
6	Bamboo	-	-	Magar Rs. 290/- to 310/-	2050 Qtl.	

CHAPTER –IV
STAFF AND LABOUR SUPPLY

21. Staff: -

The head quarter of Hoshiarpur Forest Division, Garhshankar Forest Division and Dasuya Forest Division are located at Hoshiarpur, Garhshankar & Dasuya respectively. Hoshiarpur Forest Division is a very old administrative set up and its history goes back up to 1900 whereas Garhsankar and Dasuya Forest Division are comparatively of recent origin and created in 1979, 1984 respectively mainly to intensify the activities of afforestation in the shivalik hills. Each Forest Division is administrative divided in to four ranges. Each range is a self contained administrative unit under the charge of a Range Forest Officer who is responsible for the management, control and protection of the forest resources within the range. The Range Officers work under the supervision of Divisional Forest Officer who is over all incharge of the Division and is usually an I.F.S/P.F.S Officer in the rank of the Deputy/Asstt. Conservator of the forests.

The existing strength of both executive and ministerial staff of this forest division is reproduced below: -

Name of the Post		No. of Division								
		Hoshiarpur			Dasuya			Garhshankar		
		*P	*T	Total	*P	*T	Total	*P	*T	Total
1) Dy.C.F	:	1	-	1	-	-	-	-	1	1
2) A.C.F	:	1	-	1	1	-	1	1	1	2
3) Sub Divisional Solil Conservation Officer		-	1	1	-	-	-	-	-	-
4) Research Assistant	:	-	1	1	-	1	1	-	1	1
5) Supdt Grade-II	:	1	-	1	1	-	1	-	1	1
6) Forest Ranger	:	4	1	5	3	2	5	3	2	5
7) Senior Assistant/Store Keeper	:	-	1	1	-	-	-	-	1	1
8) Statistical Assistant		-	1	1	-	-	-	-	-	-
9) Soil Conservation Assistant	:	-	-	-	-	1	1	-	1	1
10) Dy. Ranger	:	2	-	2	2	-	2	2	-	2
11) Technical Assistant	:	-	-	-	-	-	-	-	1	1
12) Forester	:	11	1	12	9	2	11	9	2	11
13) Surveyor	:	-	1	1	-	1	1	-	1	1
14) Demarcation Supervision and Kanungo	:	2	-	2	-	-	-	-	1	1
15) Junior Draftsman		1	-	1	-	-	-	-	-	-
16) Forest Guard	:	50	3	53	60	3	63	50	3	53
17) Steno Typist	:	1	-	1	-	1	1	-	1	1

Name of the Post	No. of Division									
	Hoshiarpur			Dasuya			Garhshankar			
	*P	*T	Total	*P	*T	Total	*P	*T	Total	
18) Jeep Driver	:	-	2	2	-	2	2	-	2	2
19) Tractor Driver	:	-	3	3	-	3	3	-	4	4
20) Fieldman		-	1	1	-	-	-	-	-	-
21) Computer Operator		-	1	1	-	1	1	-	1	1
22) Clerk/Junior Assistant		5	3	8	6	3	9	5	3	8
23) Demarcation Droga		1	-	1	1	-	1	1	-	1
24) Patwari		-	1	1	-	1	1	1	-	1
25) Peon		4	2	6	4	2	6	4	2	6
26) Chowkidar		5	2	7	4	2	6	5	3	8
27) Mali		5	-	5	4	-	4	4	-	4
28) Sweepar		1	-	1	1	-	1	-	1	1
29) Beldar		-	-	-	-	-	-	-	-	-
Total		95	25	120	96	25	121	85	33	118

*P = Permanent *T = Temporary

Most of the field staff of the territorial forest division is employed for the management of the existing Government forests, besides private forests which fall under the category of “Closed Areas” under Punjab Land Preservation Act, (1900) are also managed by the forest department as per the provision given in respective notifications. The staff of the Wildlife Forest Division are engaged in the management of Wildlife and treating the catchments with this angle. The protected areas have been handed over to Wildlife Division. It is not out of place to mention here that due to introduction of intensive forestry practices, execution of various development schemes and providing extension services at the district level both the office and the field work has increased tremendously in the recent past making it desirable to create additional posts and enhance cadre strength on the basis of the work load. It is felt that double the strength of the present field and ministerial staff is required for execution of different project works. Provision for enhancing the strength of staff may be made as per restructuring of the department as soon as possible.

22. Labour

The labour force required for the execution of various forest operations is available locally and is adequate for greater part of the year. However, the shortage of labour is felt in the sowing and harvesting season of *Rabi & Kharif* Crops. Daily wage rate for the labour is fixed by the Department of the labour, Govt. of Punjab. The daily wage rate prevailing at present on 1/3/2012 is Rs. 185/- for unskilled and Rs 202/- for skilled labour.

Chapter-V

PAST SYSTEM OF MANAGEMENT

23. General History of Forest

The forests in the Shivalik hills were once boasted of being one of the densest forests prior to the coming of Britishers. The forests were under the ownership of Chieftains which were mainly used for the purpose of game hunting. At that time even the tiger, as per the district gazetteer of Hoshiarpur district, roamed freely in the forest. With the coming of Britishers the local Chieftains surrendered most of the lands to the local *Zimindars*. The lands were, thus, cleared of jungles to make way for agriculture. Herbivores soon out-numbered the demanded balance of carnivores. Most of the Carnivores lost their habitat, fell prey to the bullets and thus dwindled in number. All this caused massive soil erosion and hill torrents rendered cultivable fields into non arable barren lands, in 1900 the Government promulgated Punjab Land Preservation Act (PLPA) in which Deputy Commissioner was made main in charge for over seeing the felling of trees etc. from these lands, Lands were basically demarcated into Section 4&5. A management system was also designed for these lands as per the Act. From 1934 onwards these lands were gradually given to forest department and by 1939 complete control of Hoshiarpur Shivaliks was transferred to Forest Department. In 1947, when the country was partitioned, lots of Muslim land owners left for Pakistan. Majority of the Evacuee lands purchased by Forest Department from Ministry of Rehabilitation Government of India have been declared as protected forests though some of these lands remained as un-classed forests.

24. Past System of Management

(i) Forest Management from 1900 to 1930:-

During this period PLPA was implemented and lands were classified as closed areas under of PLPA Section 4 & 5. Section 4 areas constituted the lands with gentle slope or slightly undulating. In these lands the trees could be felled for bonafide domestic and agricultural use and grazing was normally allowed except by camels, goats and sheep. The trees could only be sold with the permission of civil authorities. Restrictions under Section 5 were more rigorous. In these areas no grazing and no felling of trees was allowed even for bonafide use. Trees were only made available to local population by permit from civil authorities. No improvement works could be carried out.

(i) Work carried out in the strips

a) Roads: - Prior to the transfer of the strips along the roads to the forest Department a large number of malies and other arboriculture staff was there to plant trees. During that time the main stress was to plant fruit & Shady trees along with Shisham etc. The idea was to raise aesthetically good plantations without following any proper silvicultural system. Similar exercise was done on Zila Parishad Roads. The presence of rows of big old shisham trees reflects that the work was done with zeal. Because of the Mali system then trees were tendered well. But when the strips along the roads were transferred to the Forest Department for management purposes, this practice was stopped. Under the Forest Department, working circles as per the tree species were created. The areas under particular species was identified along the roads and those areas were planted with that species only. Every working circle was silviculturally managed as per the silviculturally feasible commercial rotation. Eucalyptus plantations were raised on a large scale because of the priority of the contemporary period. It was largely a pit planting with artificial irrigation where so ever possible. Details of plantations for the past 10 years along the roads can be seen from the Annexure-XII.

b) Canal & Bundhs :- Planting on canals belonging to Shah Nehar system and Bist Doab Canal System has been done by the Forest Department. The efforts are quite successful in Bist-Doab canal system where mixed crop of Shisham and Eucalyptus with some Mulberry in the under storey and a sprinkling of other species have also come up well. First-rotation-Eucalyptus on this system has been harvested and has given good returns.

The efforts of Shah Nehar System are not so successful due to encroachment, lack of boundary pillars and service roads on some distributaries and minros.

On bundhs Shisham, Kikar & Eucalyptus have been quite successful. Stocking and growth is better on the slopes than on the strips beyond the toe.

C) Rails: - Before the transfer of lands along the rails the railway authorities would plant some shady, ornamental and fruit trees at the stations, in the colonies of railway employees. But again no systematic scientific plantation was done. Under “grow-more-food” campaign agriculture crops were given priority over the silvicultural crops. Thus the growth of silvicultural crops was hampered during that period. Plantation by the Forest Department was taken up after the transfer of lands to the Forest Department for management purposes. The plantations were done with the species specially identified for that particular working circle. The management of plantation was again based on the species working circle. Thus the areas were clearly earmarked

for raising a particular species. Eucalyptus plantations were raised on large scale because of the priority of the contemporary period. It was largely pit planting with artificial irrigation wheresoever possible.

(ii) **Special works of improvement:**

As early as 1939, works on soil conservation were started by the Forest Department which included afforestation, Choe training, Contour trenching, gully plugging, check dams, baggar planting etc. Balwant Singh's Working Plan (1941-51) was followed for Dholbaha Valley. These works were stopped for some time and again started in 1970's. Lately there has been a lot of stress on soil Conservation works along with afforestation to give green cover to denuded hills. For this purpose a separate project of IWDP (Hills) had been in operation. The major thrust of the project was to restore the vegetative cover by massive afforestation along with the soil conservation measures in the selected water sheds. Emphasis was on treating the watershed holistically on the basis of factors like slope, run off rate, rain fall intensity, time of concentration etc. This project envisaged areas under Shivalik belt to have improved quality of life for the target population. Besides forestry and soil conservation works animal husbandry component dealt with better qualitative milch cattle. Horticulture component dealt in bringing more area under high yielding fruit crops with the supply of superior quality planting stock. Through Agriculture extension, farmers were educated to follow improved agriculture such as agro forestry and farm forestry practices for better crop yields and remuneration.

25. Sh.Bishan Chand's Working Plan (1981-82 to 1990-91)

This working plan was prepared for the block forests of Hoshiarpur District. The main object according to this working plan was retention of permanent vegetative cover on hill slopes or other sensitive areas so that the soil erosion is minimized. In the areas which have already recouped and stabilized, the object was to shift from conservation forestry to production forestry. For this purpose four working circles were proposed viz. shisham working circle, khair working circle, chil working circle and baggar (overlapping) working circle. Shisham and Eucalyptus bearing areas or blank areas fit for these species were allotted to shisham working circle whereas situated within Shiwaliks and foot hills were allotted to khair working circle. To encourage baggar planting, a separate working circle was prescribed. Within the period of working plan various plantation schemes were implemented among which the most important is Kandi Water Shed and area Development Project with the assistance of World Bank. Extensive soil conservation and planting woks were carried out in this Project period. However, the policy of the Govt., of India became more conservation oriented than ever before, and it was not possible to

shift to production forestry. Moreover, due to sensitive condition of arrears, it was not desirable to extract the prescribed volume. In the Shisham working circle, it was prescribed to clear fell Eucalyptus and again stock it with Eucalyptus and other species. No yield was calculated and it was left to be controlled by area. The plan therefore was not entirely conservative.

26. Sh. R.K. Luna's Working Plan (1991-92 to 2000-01)

The main object of this working plan was to raise the ecological status of the area by restoring vegetative cover in the depleted Shiwalik hills and foot hills. For the purposes of management, the working plan prescribed five working circles viz. Block forest working circle. Road Working circle, Rails Working circle, Canals Working circle and Drains Working circle. The salient features of the plan are: -

- (1) No green felling of Shisham, fruit trees and chil trees in all type of forests.
- (2) Prescribed yield has been limited to 50% of the calculated yield.
- (3) Special measures have been prescribed for re-vegetating the depleted cover in the Shiwaliks.
- (4) Indigenous and miscellaneous tree species have been given preference over other species in the plantation programmes.
- (5) A management plan for wildlife has been introduced.

This working plan is basically a conservation oriented plan with great emphasis on restoration of ecological balance by massive afforestation.

26. (A) Sh. D.V. Ratna Kumar Working Plan (2002-03 to 2011-12)

The most important object of management was to maintain ecological balance with the main aim to check degradation of forest and increase productivity of the government forests. Besides the aforesaid primary aim the secondary objectives were: -

- i) To reverse degradation due to biotic and abiotic factors and enhance productivity of strip and block forests through qualitative and quantitative improvements in the growing stock by undertaking massive afforestation and other conservation works.
- ii) To provide shade, shelter and resting places along strip forests for travelers and public in general.
- iii) To improve the aesthetics of the countryside.
- iv) To create favorable conditions for protection and development of Wildlife i.e. to provide proper food and cover.
- v) To improve tree cover by planting suitable trees species.
- vi) To provide for progressively maximum sustained yield consistent with the above said objects of management.

27. Inter-Departmental Rules

Planting along the strips by the Forest Department is subject to the Inter- Departmental Rules. According to these rules 11 mtr.(35ft) width from the centre of the road is to be left unplanted on both sides of National Highway and 9.5 mtr (30 ft), on other roads.

Along railways the distance of the first row is to be 7.5 mtr. (25 ft.) from the centre of the line. No planting is also to be done inside the curve, on the slopes of embankments and within 100 mtr. length of un-manned crossings, It is now obligatory to consult the railway staff before planting in station yards and reaches within the outer signals.

In case of canals, first row of trees is to be planted at a distance of 7.5 mtr (25 ft.) from the top of the berm (Daula) of the Canal. For planting within this distance, concerned Executive Engineer has to be consulted.

By and large the interdepartmental rules have been observed. Planting under high power transmission lines and telephone lines has also been avoided for obvious reasons. There is, however, no harm in utilising such sites for planting ornamental and other shrubs.

28. Past Revenue and Expenditure: -

The figures regarding the Revenue and expenditure for the past ten years as received from the concerned Divisional Forest Officers of these Divisions are as follows: -

Table .14

Past Revenue & Expenditure

Year	Hoshiarpur		Dasuya		Garhshankar	
	Revenue	Expenditure	Revenue	Expenditure	Revenue	Expenditure
2001-02	10441489	98609149	8136278	78274501	4328785	6310906
2002-03	1460639	58882624	5778621	56662055	2226953	9304164
2003-04	2476408	85656834	7822828	56662055	918339	56571078
2004-05	8917022	70194177	3375387	43476603	6722671	6447242
2005-06	5675060	59133766	8925670	28825741	8923787	9062587
2006-07	15904019	54644739	19122837	38331007	5777906	21021610
2007-08	7064008	36399639	9083817	27042610	3088651	15125925
2008-09	2657090	34271458	12638388	26368445	2858989	20124131
2009-10	14242118	46225610	8264855	30573379	6464524	22061513
2010-11	2254980	30788871	3540426	21268440	2614512	25622930
2011-12	2129333	27227003	1736451	20283682	1386224	29127960

Total	73222166	602033870	88425558	427768518	45311341	227725202
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Past growing stock of Hoshiarpur, Dasuya and Garhshankar Forest Divisions as per last working plan is as under: -

Species	No. & Vol.	Divisions			Total
		Garhshankar	Dasuya	Hoshiarpur	
Eucalyptus	Number	41321	191173	89605	322099
	Volume	28610.15	59250.96	59139.25	147000.36
Shisham	Number	31315	46307	119887	197509
	Volume	26456.65	19958.48	54935.40	101350.53
Kikar	Number	4656	8421	13486	26563
	Volume	3893.65	6482.40	5564.75	15940.80
Fruit	Number	2423	1806	1957	6186
	Volume	2139.70	2884.45	4729.20	9753.35
Misc.	Number	75913	127483	197194	400590
	Volume	22736.55	16032.80	53434.95	92204.30
Chil	Number	-	11900	6297	18197
	Volume	-	8700.00	2786.50	11486.50
Khair	Number	-	66411	419325	485736
	Volume	-	6890.80	74109.35	81000.15
Total	Number	155628	453501	847751	1456880
	Volume	83836.70	120199.89	254699.40	458735.99

Similarly as per working in the last working plan data of volume prescribed for felling and actual volume felled is as under: -

Division		Period	Shisham	Kikar	Euc.	Khair	Misc.	Fruit	Total
Garhshankar	Prescribed	2002-11	0	1191.83	7782.77	2090.38	1297.52	0	12362.50
	Harvested	-"-	10066.75	2864.80	3210.65	202.03	15991.50	0	32335.73
Hoshiarpur	Prescribed	-"-	0	1390.13	11479.77	8893.12	957.79	0	22720.81
	Harvested	-"-	16754.10	3521.90	13015.60	2080.30	12085.70	0	47457.60
Dasuya	Prescribed	-"-	0	1997.66	17850.79	1653.79	634.13	0	22136.37
	Harvested	-"-	8352.15	4883.80	16626.70	314.40	3645.55	765.45	34588.05
Total	Prescribed	-"-	0	4579.62	37113.33	12637.29	2889.44	0	57219.68
	Harvested	-"-	35173	11270.50	32852.95	2596.73	31722.75	765.45	114381.38

In the last working plan the total growing stock was 14,55,300 (450042 M³) in all the working circles. Against this prescribed yield was 57,219.68 M³ and volume felled was 1,14,381.38 M³. This is due to volume of all dead dry trees in all the working circles which has surpassed the prescribed yield. This is due the fact that the prescribed yield in the last working plan was 20% of the actual yield. The detail of volume prescribed yearly and volume felled yearly in all the three divisions of this working plan has been annexed as Annexures-V, VI & VII.

In this working plan total growing stock is 3144052 (768721.95 M³) in all the working circles. Against this prescribed yield is 25,184.6366 M³. In this working plan according to

guidelines issued by the Government of India, the prescribed annual yield has been limited to half of the calculate yield. This has been done to fell the overage stock in all the working circles.

Chapter-VI
GROWTH & YIELD STATISTICS

29. General Volume Table

Volume table of different species being used in State is same for both strip and block forests. This table amended C.C.F Punjab vide his letter No.C-I-34(61)/4640 dated: 30-05-1986 is as follow: -

Girth in Cms.	Class	Volume (M3)
30-59	V	0.05
60-89	IV	0.15
90-119	III	0.55
120-149	IIA	1.10
150-179	IIB	2.00
180-209	IA	2.80
210& above	IB	3.50

Volume calculations in this Working Plan have been made according to above table. However the yield calculated by Mohindra's Volume Tables for Shisham in Punjab and Chaturvedi's Volume Tables for Eucalyptus, show differences of volume in case of Shisham and Eucalyptus respectively. The difference in younger age classes is more significant. For comparison, the volume expected. According to general volume table, Mohindra's volume table and Chaturvedi's volume table are given below: -

Dia in cm	Class	Volume in cubic meters		
		C.C.F's general volume table O.B	Mohindera's volume table (Shisham) O.B.	Chaturvedi's volume table (Ecu.) O.B
0-19	V	0.05	0.072	0.114
20-29	IV	0.15	0.309	0.385
30-39	III	0.55	0.711	0.819
40-49	IIA	1.10	1.277	Not available
50-59	IIB	2.00	2.009	Not available
60-69	IA	2.80	2.905	Not available
70 & above	IB	3.50	3.967	Not available

The comparison shows that the general volume table underestimates the volume. But keeping in view the deteriorating condition of the forests due to excessive biotic pressure this will help in improving the stocking of the forests.

However for academic interest the growth data collected and produced in the previous Working Plan have been found satisfactory and reproduced again.

(a) **Shisham:-**

The growth data given below is based on actual measurements carried out for previous Working Plan upto 35 years while beyond 35 years has been presumed to be same as that of natural Shisham crop in U.P & derived from S.H. Howards Yield Tables for Shisham. The following growth statistics have been derived on the basis of above information.

Age (Years)	Girth in Cms
6	21.00
10	45.00
15	64.65
20	83.40
25	97.50
30	111.00
35	124.50
40	139.20
45	150.90
50	162.45
55	173.55
60	183.45

(b) **Kikar**

The growth data calculated on the basis of actual measurements in the field used in the last Working Plan has been found satisfactory and is reproduced:

Age (Years)	Girth in Cms
4	24.00
6	30.00
8	40.50
10	49.50
15	72.00
20	96.00
25	105.00
30	112.50

(c) **Eucalyptus**

The growth data collected from different Eucalyptus areas in the last Working Plan and is reproduced below:-

Age (Years)	Girth in Cms
4	39.00
5	42.75
6	48.49
7	55.50
8	59.25
9	64.50
10	69.00
12	75.75
14	-
18	-
20	-

Conversion factors:

The conversion factors applied are given below: -

- i) For converting stacked volume into weight multiply 0.3.
- ii) In order to convert solid volume to stacked volume multiply by 1.67
- iii) In order to convert Cfts. into Cmt. divide by 35.3147.

Chapter VII

BASIS OF PROPOSALS

30. General objects of management

The most important object of management is to enhance eco-system services and to provide local livelihood opportunities to the local communities and conserve and restoration of biodiversity. This will be done by managing the growing stock on the govt forest in such a way as to maximize the productivity and maintain ecological balance.

Keeping this in view and the fact that the area under tree cover is dismally low, the general objects of management of this Working Plan shall be as under: -

- i. To enhance eco-system services and to provide local livelihood opportunities to the local communities and conserve and restoration of biodiversity
- ii. To conserve soil and subsoil moisture and ground water recharge so as to reverse degradation of ecologically fragile ecosystem.
- iii. To increase the growing stock for production of timber, fuelwood and fodder to meet the needs of the local population.
- iv. To create favourable conditions for protection and development of wildlife.
- v. To enhance the aesthetic value of forests i.e. to provide landscape to the countryside.
- vi. In consistence with the above objects of management, to provide maximum sustainable yield in perpetuity.
- vii. To involve the local community through Joint Forest Management and create awareness and sense of belongingness towards the forests.
- viii. To improve the climate conditions of the area to give good environmental conditions to the lives.

31. Method of treatment

The ownership of the strips along road, rail, canals & drains lies with the respective departments and the management of these areas are governed by different sets of inter-departmental rules. The Railway strips and National highways belong to Government of India where as State Highways, Link roads, Canal, Bundhs and Block forests belong to State Govt and

a separate account of revenue and expenditure is required to be maintained. Accordingly it has been considered more convenient and proper to allot these strips to the separate Working Circles. It will facilitate to monitor the progress of afforestation and evaluation thereof, under each category of strips.

Over the years many plantations have been raised in strips as well as in the block forests. Natural regeneration of various species has also been taking place to some extent simultaneously and some failures have been there, necessitating the re-planting of the area. Due to these reasons, most of the strips have mixture of species and age gradations with intermittent scattered blank patches. Most of the compartments have some blank patches which need planting, some dense crops of poles requiring thinning, some over mature diseased trees are required to be removed, some young re-generation which require tending and likewise. Under these circumstances it is being proposed to treat the compartment as a whole and carry out all the operations which are required according to the silvicultural requirements of the various species. While the blanks will be planted keeping in view the locality factors of the area. This treatment will help in stocking the compartment fully. Due care will be taken while selecting plantation model keeping in view all the factors. On road strips long gestation crops such as Shisham, Jamun & Mango are to be avoided keeping in view the repeated diversion of forest area for widening, furlaning etc. Tall plants may be planted on road sides because of the difficult site conditions. Canal strips should be invariably used for planting irrigated crops, fruit trees and trees of economic value as assured irrigation facilities are available. On Bundhs and escapes thorny species such as Eucalyptus, Kikar, Acacia tortilis, Khair, Prosopis etc, are better suited. In water logged areas species like Arjun, Jamun, Willow, Bamboo etc, come up well. The above pattern also helps in raising a mixed plantation in place of pure plantations. Areas near habitations and refractory sites will not be felled and special efforts will be made to plant these areas with suitable species with special attention.

Although a number of steps have been taken recently to conserve shisham trees and lot of new guidelines have been issued from time to time in this regard, yet more concerted efforts are required to increase the shisham stock by planting more shisham plants and favoring shisham species to other species where there is a choice. Fruit and multipurpose trees such as mango, jamun, papal, bohar etc. Will be preserved. The root suckers, wherever they exist, will be tended and protected properly. The natural re-generation existing will be adopted and tended properly. Similarly chill will be planted in suitable areas of Dasuya and Hoshiarpur Forest Divisions.

32. Thinning:

No thinning conforming to 'D' Grade onwards will be carried out but Divisional Forest Officer, depending upon the requirement, shall order thinning after inspection of the crop to improve the same so that forest crop will become healthier.

33. Other Silvicultural Operations:

Other silvicultural operations like singling, spacing, pruning, climber cutting, kana stubbing etc, will be done as per the requirement of the crop on the basis of technical notes given in the Punjab Forest Manual Vol.III. The Principal Chief Conservator of Forests Punjab is the competent authority to alter the planting techniques and give thrust to new methods of planting and tending.

34. Constitution of working circle:

Working circles by the name of species have become redundant because of the predominance of mixed crop of different species in most of the areas. Moreover there is no specific silviculture system which can be applied to a specific working circle. Every working circle will be managed on the basis of artificial regeneration with improvement felling and thus a new order for intensive working evolves. On this basis the following working circles have been prescribed:-

- i) Block Forests Working Circle.
- ii) Road Working Circle.
- iii) Canal Working Circle.
- iv) Drain/Bund Working Circle.
- v) Railway Working Circle.

The area figures in respect of all the working circles are only those, the legal status of which is forest land.

Besides this following overlapping working circles have been described.

- vi) Wild life (Overlapping) working circle
- vii) J.F.M (Overlapping) Working Circle.
- viii) NTFP (Overlapping) Working Circle.
- ix) Protection (Overlapping) Working Circle.

i) Block Forests Working Circle

This working circle includes all block forests including protected and unclassified forests. The total area under this working circle is 14374.17 Ha. The block forests working circle consist of the areas where massive afforestation and extensive soil conservation works will be under taken. These works will be carried out on micro watershed basis. The treatment includes contour trenching & afforestation with small vegetative shrub barriers, rubble masonry dams, choe training work etc. Baggar grass will be planted at suitable places either on the berms of the contour trenches or in separate patches in the spaces between the trenches. Wherever there are chances of natural re-generation the area will be fenced and protected. No planting will be done in the blanks falling in the natural regeneration areas. Due to mixed nature of all age classes and species no specific silviculture system is being prescribed. Joint Forest Management will be followed for better protection of forests and sustainability and replication of the works.

II) Road Working Circle

This working circle covers all the roads namely National and State Highways, District and other roads within the civil jurisdiction of the area for which this working plan is prepared. The total area under this working circle in 571.75 ha. It is not possible to allow a specific silviculture system as the nature of crop is uneven and mixed consisting of all ages. Special care will be taken to protect the natural re-generation preferably by fencing. Natural regeneration will be supplemented by artificial planting where there are sizeable gaps. "Punjab Apportionment of Trees Rules-2000" as issued by Govt. of Punjab vide No 29/25/98-Ft-III/14024 dated. 3rd Nov., 2000 will be implemented in which the proceeds of the trees standing in the strips will be shared with the farmers of the neighboring agricultural land. The responsibilities required to be performed by the farmers in the light of the agreement shall be ensured on the ground for better protection of crops on road strips from specially biotic pressures and fire.

III Canal Working Circle

This working circle comprises of all areas falling along Canals, distributaries, minors etc. covered within the civil jurisdiction of Hoshiarpur District and part of Nawanshehar District. It covers a total area of 593.12 Ha. It is not possible to follow a specific silviculture system as the nature of crop is uneven and mixed consisting of all ages. Special care will be taken to protect the natural re-generation which will be fenced preferably. Natural regeneration will be supplemented by irrigated artificial planting where there are sizeable gaps which are found in

large numbers on these strip. Special efforts will be made to remove large scale encroachments and plant up these areas.

IV) Drain/Bund Working Circle

This working circle comprise of all land along Drains, Bundhs and Escapes, falling within the jurisdiction of the area of this working plan. It covers an area of 176.38 Ha. No specific silviculture system is being followed as the nature of crop is uneven and mixed consisting of all ages. Special care will be taken to protect the natural re-generation and these areas will be fenced preferably. Natural regeneration should be supplemented by artificial planting, where there are sizeable gaps. Special efforts will be made to remove large scale encroachments and afforest these areas.

V) Railway Working Circle

The working circle includes all the areas along the rail strips falling within the area for which this working plan is prepared. The total area under this working circle is 320.86 Ha. As the nature of crop is uneven and mixed consisting of all ages there it is not possible to follow any specific silviculture system. Special care will be taken to protect the Natural re-generation and these areas will be fenced preferably. Natural re-generation will be supplemented by artificial planting where there are sizeable gaps. There are innumerable gaps which require extensive efforts to afforest them and special efforts will be made to remove large scale encroachments and afforest these areas also. Better co-ordination with concerned railway authorities is required to manage these areas as in the recent years there arose certain problems with regard to maintenance of railway strips by Forest Department. Needful agreement between the participant departments at the earliest will help solve the problems. This is the reason that for the past many years no work has been carried out on most of these areas.

35. Block and Compartments:

Block have not been constituted in the strips where as block forest in each village is treated as a separate block. In case of Rail and Road strips, 5 Km. Length on either side forms one compartment while in case of Canals, bundhs, drains and escapes 15 R.Ds on either side constitute one compartment. The left and right side will be denoted by the letter L & R. The numbering has been done from O-Tail in ascending order. For example compartment No.5 L means the left side strip between kilometer stones No.20-25 in case of road and rail while left side strip between R.D. stone No. 60-75 in case of canals, drains, bundhs. No sub compartments have been formed however, if the part of compartment falls in other division, it is indicated by

the letter P.e.g. C5 (P) means part of compartment 5. In case of block forests the area falling in each village has been considered as one block and are not further divided into compartments. The compartments are given in the area statement. But for these compartments, there is no silvicultural system like periodic block or group's selection system. In fact these compartments are of historical significance and can not be termed as silviculturally pure compartments. Certain other block forest have not been divided into any compartments and they are dealt with as such. Strip forests which are more than 5 Kms/15 RDs and less than 10 Kms/30 RDs have been accounted for in a single compartment.

36. Period of Working Plan:

This working plan shall be for a period of 15 years w.e.f 01.04.2012 to 31.03.2027 and shall be deemed to have come in force with effect from 01.04.2012. Mid term review will be undertaken after the expiry of 8 years after the commencement of this working plan.

Chapter VIII

WORKING PLAN FOR BLOCK FORESTS WORKING CIRLE

37. General Constitution

This working circle includes all block forests both protected and un-classed forests falling in Hoshiarpur, Garhshankar and Dasuya Forest Divisions. It, however, excludes protected forests of Ban Nandbir and Reserved Forests of Bindraban and Karanpur of Dasuya Forest Division for which a separate working plan already is in force. The total area of working circle is 14374.17 ha. As surveyed and corrected from preliminary working plan. The area statement has been attached in the **table No.15, 16 &17**. Majority of the block forest areas are evacuee lands purchased by the Forest Department during 1961 and 1971. Areas surrendered to the Rehabilitation Department have not been included here except Salempur and Tahli forest of Dasuya Forest Division. Many areas have since been declared as Protected Forests under chapter IV of Indian Forest Act, 1927 but some forests still remained as unclassified forests. The size of forests differs considerably just from a hectare of Sadowal Forest In Garhshankar Forest Division to 2221.80 Ha. Of Dada Forest in Hoshiarpur Forest Division. Each Block Forest is further sub-divided into compartments, but some of the block forests are too small to be sub-divided into compartments. The external boundaries of some of the Protected Forests have not been clearly demarcated on the field.

38. Series, Blocks and Compartments:

(i) Series: This working circle has not been divided into any series, the reason being that the crop varies to a great extent in age, density and composition and it is difficult to regulate the forest crop on the basis of the series.

(ii) Blocks and Compartments:

There are no blocks as such inside the block forests and they are divided directly into compartments. Detailed statement of areas of individual Block Forest is attached in the **Table No.15to16**.

38-A. Special Objects of Management:

The special objects of management of this working circle are:

- 1) To enhance the ecosystem services and to provide local livelihood opportunities to the local communities and conservation and restoration of biodiversity.

- 2) To create favourable conditions for protection and development of wildlife.
- 3) To increase the growing stock for production of timber, fuelwood and fodder to meet the needs of the local population.
- 4) To enhance the aesthetic value of forests i.e. to provide landscape to the countryside.
- 5) To reclaim Alkaline/Saline areas with suitable species and to bring refractory sites under hardy species for maximum utilization of natural resources.
- 6) In consistence with the above objects of management, to provide maximum sustainable yield in perpetuity.

39. **Character of Vegetation:**

The vegetation over the tract dealt with under this working circle can broadly be divided into three types, namely scrub forests in hills and foot hills conforming to Champion and Seth's forest type 5B/C2 (Northern dry mixed deciduous forests) at places deteriorating to 5B/DS2 (Dry deciduous scrub), khair-sissoo forests in foot hills, bela and mand areas (type5/IS2) and chil forests over part of Shiwaliks conforming to forest type 9/C1 a (Shiwalik chir pine forests).

a. The scrub forests: A majority of the areas fall under this type. Before these areas were transferred to the Forest Department most of these areas have remained under section 4 and 5 of Punjab Land preservation Act, 1900 for decades together. As a result of restrictions imposed under this act for felling and growing trees, vegetative cover over these areas has generally improved specially in upper parts of the catchments and along choe banks. The proportion of valuable species, particularly khair and Bhabbar have also considerably improved on account of sowing and planting operations.

In addition to khair (*Acacia catechu*) and Shisham (*Dalbergia sissoo*), other tree species forming part of vegetation in these areas include Rajain (*Holoptelia integrifolia*), Simal (*Bombax ceiba*), Amaltas (*Cassia fistula*), Amla (*Emblica officinalis*), Kembal (*Lannea grandis*), Phalahi (*Acacia modesta*), Bel (*Aegle marmelos*), Kangu (*Flacourtia ramontchii*), Dhak (*Butea monosperma*), Tun (*Toona ciliate*), Sannan (*Ougeinia ookeinensis*), Padal (*Oroxylum indicum*), Beri (*Zizyphus mauritiana*), Dhaman (*Grewia oppositifolia*), Chhal (*Anoegissus latifolia*), Kikar (*Acacia nilotica*). Two common bamboos are *Dendrocalamus strictus* and *D. hamiltonii*, Common shrubs include Mallah (*Zizyphus nummlaria*), Kuri (*Nyctanthus arbortristis*), Dhavi (*Woodfordia fruticosa*), Panch phuli (*Lantana camara*), jatropa spp., Karaunda (*Carissa opaca*),

Mehndar (*Dodonaea viscosa*), Kaner (*Nerium indicum*), Gandla (*Murraya koengii*) etc. Taur (*Bauhinia vauhli*), Giloe (*Tinospora malabarica*), Gauj (*Milletia suriculata*), Bakarbel (*Ichnocarpus frutiscens*), Daghiari (*Mimosa himalayana*) are the common climbers. Grasses generally found making thick mats on moderate slopes are lunci (*Themeda ananthera*), Sariala (*Heteropogon contortus*), Dhalu (*Chrysopogon montaneus*) Palwan (*Dicanthium annulatum*) and Baggar (*Eulaliopsis binata*).

b) Khair-Sissoo forests: These are mainly man made forests came in to being as a result of planting in foot hills, bela areas along choes and mand areas. In addition to khair and sissoo, eucalyptus hybrid is another species planted over substaintial areas, Groves of mango trees are also met with in many forests areas. In a few forests e.g Sehjowal and Chak nur ali, Siris (*Albizzia lebbek*) has been mainly planted. Some of the trees and shrub species mentioned under scrub forests are also common in these areas. Lantana, however, is more common and tall grasses like kana (*Sacharum munja*) and Kahi (*S.spontancum*) predominant in extent over other grass species.

c) Chil forests: *Pinus roxburghii* (Chil) is the predominant species in Barikhad and part of Dehrian and Chatterpur forests mainly confining to the upper reaches of shiwaliks. Chil trees in small patches are also found elsewhere in Saleran, Janauri, Kukanet, Narur etc. This species is found either pure stands or mixed with scrub species in different proportions. The chil is mostly of poor quality. It is density is much better in Barikhad and upper Dehrian areas but is poor in Lower Dehrian and Chattarpur. Under growth and the ground flora is comprised of almost the same species as has been mentioned in case of scrub forests.

40. Method of treatment:

The basic thrust will be to improve the vegetative cover on the Shiwalik hills. The endeavor will be to do the extensive soil conservation works on micro-watershed basis. The soil conservation works will include vegetative barriers, rubble masonry dams, cratewire structures, choe training works such as live hedges in single and double lines, land slide and slip control measures, brushwood check dams, contour trenching, contour bunding etc. Precautions will be taken to minimize the destablisation of soil and destruction of vegetation. The blank patches and areas prone to sheet, slip and gully erosion will be taken up for soil conservation works, Baggar grass will be planted on the slopes, along contours and on the berms of trenches. The areas of natural regeneration will be fenced and protected against cattle damage. The natural regeneration will be encouraged, however, artificial planting should be done in the blanks with

species like, khair, Shisham, Neem, Rajain, Sirs, Drek, Amla, Subabul, Bamboo etc. Lantana will be eradicated from the Block Forests of hills and plains by planting Bamboo or other suitable species because the problem of lantana is a major issue in these areas. Planting of Bamboo in suitable areas of Block Forests will be done extensively, so that it gives a proper cover and helps in eradication of lantana. Planting Eucalyptus will be reduced in stages in the upper reaches and restricted to in the foothills which are not suitable even for the other miscellaneous species. The advance growth of eucalyptus will be retained. Undershade planting of mulberry may be carried out in plain areas of block forests with assured irrigation keeping in view the favourable conditions existing for raising mulberry. In the Chil areas, fire protection measures should be strengthened and special care be taken against forest fire in the dry season. Regeneration will commensurate with felling and felling will be done only after ensuring budgetary provision for regeneration.

41. Silvicultural system:

As the crop in almost all the block forests consists of different age classes gradation and species, silvicultural system to be followed is “Selection cum improvement felling”. In no circumstances clear felling will be allowed in any block forest. The marking shall be done in manner that the canopy remains closed so as to preserve soil and water conservation in the area.

42. Rotation:

In view of complete ban on felling of green Shisham and Chil, the only species available for felling will be eucalyptus, Khair and miscellaneous species. The rotation has been defined as follows:

Sr No	Name of the species	Rotation In years	Exploitable Girth at b.h (o.b) in Cms
1	Khair	30	90
2	Shisham	60	180
3	Kikar	25	105
4	Eucalyptus	25	130
5	Misc. Species	60	180
6	Poplar	12	90
7	Mulberry	20	80

43. Calculation of Yield:

According to the Simmon’s modification of Von Mantel’s formula the yield has been calculated follows:-

$$Y = V (2r/r^2 - x^2)$$

Where

Y= Annual Yield in Cu. Mt

V= Volume of growing stock Cu. Mt

r= Rotation years.

x= Age in years corresponding to 60 cms. Down to which the stock has been enumerated.

Garhshankar Forest Division: -

	Shisham	Kikar	Euc.	Misc.	Khair	Total
V= Volume of growing stock	3473.25	227.80	16990.05	8530.20	8108.15	37329.45
r = Rotation in years.	60	25	25	60	30	
X= Age in years corresponding to which enumeration has been done.	20	10	10	20	20	
Y= Annual yield in Cubic meters.	130.2469	21.6952	1618.100	319.883	972.978	3062.9031
Annual yield prescribed.	65.1234 (dead & dry)	10.8476	809.050	159.941 (dead & dry)	486.489	1531.451

Hoshiarpur Forest Division: -

	Shisham	Kikar	Euc.	Misc.	Khair	Total
V= Volume of growing stock	61157.10	8281.95	103904.60	148863.10	202202.85	524409.6
R = Rotation in years.	60	25	25	60	30	-
X= Age in years corresponding to which enumeration has been done.	20	10	10	20	20	-
Y= Annual yield in Cubic meters.	2293.39	788.75	9895.67	5582.37	24264.34	42824.52
Annual yield prescribed.	1146.70 (dead & dry)	394.375	4947.835	2791.18 (dead & dry)	12132.17	21412.26

Dasuya Forest Division: -

	Shisham	Kikar	Euc.	Misc.	Khair	Total
V= Volume of growing stock	4508.30	43.30	28619.05	27186.60	3947.45	64304.70
R = Rotation in years.	60	25	25	60	30	-
X= Age in years corresponding to which enumeration has been done.	20	10	10	20	20	-
Y= Annual yield in Cubic meters.	169.061	4.124	2725.624	1019.498	473.694	4392.001
Annual yield prescribed.	84.531 (dead & dry)	2.062	1362.812	509.749 (dead & dry)	236.847	2196.001

According to the guidelines issued by the Govt. of India, the prescribed yield is to be kept not more than 50% of the calculated yield. There is a complete ban on the felling of green shisham and chill trees in Punjab; therefore no annual yield for green Shisham and miscellaneous species has been prescribed. The prescribed yield includes dead and dry volume.

On the basis of above calculations, the yield for Garhshankar Forest Division, Hoshiarpur Forest Division and Dasuya Forest Division comes to 1531.451 M³, 21412.26 M³ and 2196.001 M³ as compared to corresponding figures of previous working plan 401.56 M³, 1213.882 M³ and 463.6258 M³ respectively. As this indicated that the yield has considerably gone up in case of Garhshankar Forest Division whereas the yield has increased 17 times in case of Hoshiarpur Forest Division and 5 times in case of Dasuya Forest Division. Mature poplar trees are no longer productive in any forest because these trees have already crossed the rotation age and deterioration of quality of timber has begun. Therefore immediate removal of these mature poplar trees is prescribed. The yield of these poplar trees will be counted for under misc. species yield. Only 50% of the yield is prescribed keeping in view the obligations of the state to ensure good and representative green cover for environmental concerns, maintaining bio diversity of the area and wild life habitat, keeping seed stands and clonal orchards for tree improvement etc. As a consequence of ban on felling of green shisham and chill trees, no annual yield for these species is prescribed but any dead, dry and fallen trees are harvested, then the volume so obtained will be adjusted against the prescribed yield of Eucalyptus, Khair and Kikar in that order. If the volume obtained on account of felling of dead, dry and fallen shisham and chill trees is more than the prescribed annual yield of the aforesaid species as mentioned above, then the excess volume will be adjusted against the annual yield prescribed for these species in the following year in the same order so that green felling is minimized and miscellaneous species and others are preserved. For other species yield obtained through felling of dead, dry and fallen trees and through departmental fellings will be deducted from the prescribed annual yield for that species and only balance will be obtained by marking green trees. In case the yield as a result of dead, dry and fallen trees exceeds the prescribed annual yield in any particular year then excess yield will be adjusted against the prescribed yield for that species Eucalyptus, Khair and Kikar in that order. This will help restore the ecological status of the badly affected areas due to soil erosion and hill torrents. If the marking is done judiciously keeping in view the prescribed marking rules, this will help to achieve the main object of management of these forests. It is strongly recommended that the Divisional Forest Officer personally verify at least 10% the marking list in these areas.

44. Marking Rules:

1. All dead, dry, diseased and fallen trees shall be marked for felling.
2. Green Shisham and Chil trees shall not be marked.
3. In case of miscellaneous species specially, bohar, pipal and fruit trees only dead, dry and diseased trees shall be marked.
4. Advance growth of Khair less than 20 cm dia and Shisham, Jamun, Simbal, Rajain etc less than 40 cm dia will not be felled wherever it occurs.
5. No marking shall be done on slopes having gradient more than 30% in areas subject to heavy soil erosion and areas being sparsely stocked.
6. No tree shall be marked up to 10 meters from the outer boundary of gully, nallas and choes.
7. No marking shall be done for any tree which opens close canopy of the stand.
8. All mature poplars beyond rotation to be marked.

Indigenous species which are numerically coming down drastically eg Bel, Lasura, Chamror, Kangu, Kinnu, Kamal, Karir and medicinally important species shall not be marked unless dry or dead.

45. Method of executing felling:

Trees should be felled according to the following rules:-

1. Felling shall be done in hilly areas according to Rule No. 5 of Marking Rules referred above.
2. No damage shall be done to advance growth while felling the trees.
3. The annual coupe to be felled in a particular year will be marked on the ground. The size of the coupe can be varied suitably to make use of conspicuous land features such as nallas, inspection paths etc. as coupe boundary. Annual coupes of compartment should be marked on the map in the first year of plan.
4. The coupes should proceed from one side of the forest to the other in a systematic way as per the felling programme.
5. No digging of stumps will be carried out in the hilly tract. However muddies of trees affected by Ganoderma infection or otherwise diseased with contagious infection shall be uprooted to minimize spreading of diseases in the healthy stand and the pits be promptly refilled.
6. The fellings should commence before winter and should be completed by end of February, so that felling refuse can be disposed off before the onset of fire season so as to minimize the fire hazard and advance planting works carried out in time.
7. Eucalyptus should be cut slanting with the help of saw and stump height should not be more than 10-15 cms.
8. Felling of Eucalyptus should not be done in hot summer months.

46. Planting Rules:

- i) Area will be measured and marked with the help of pegs or other suitable marks and cleared of sarkanda or jungle growth.
- ii) Planting will invariably be done on contour trenches. The size of trenches and method of planting will be decided by the Divisional Forest Officer depending upon the locality factors and other relevant factors.
- iii) Wherever possible the irrigated plantations will be raised in the plain block forests and arrangement for assured irrigation will be made in advance.
- iv) The area will be fenced properly and advance earth work completed well in time.
- v) Planting should start with the onset of monsoon and be completed by the end of July.
- vi) Preference will be given to indigenous species which are numerically coming down drastically in block forests eg. Lasura, Chamror, Kangu, Kinnu, Dhak, Kamal, Hins, Karir, Bahera and other medicinally important species.
- vii) Soil conservation measures should preferably be completed one year advance in the area taken up for planting.
- viii) Coppice shall be tended on priority basis.
- ix) It will be ensured that the felling should commensurate with regeneration and sufficient funds are provided for the purpose.

47. Felling Programme:

Keeping in view of the marking rule No. 5, the felling programme will be undertaken in only those forest areas, which are either in plain areas or having gradient less than 30% slope. This however does not exclude felling of dead, dry and fallen trees in other areas. The Felling Programme is attached in Table No. 21,22,& 23. The felling programme will be strictly followed keeping in view marking rules, felling rules and overall prescribed yield and adjustments suggested thereon. As per Government instructions, there is a complete ban on felling of green shisham and chil trees.

48. Biodiversity:

The shivalik areas have maximum floral and faunal diversity in Punjab. Parker (1921) reported 1121 floral species in Punjab west of river Yamuna. The floral diversity includes Algae, Fungi, Bryophytes, Pterydophytes, Gymnosperms and Angiosperms (Grasses, Weeds, Medicinal plants & Forest trees). The faunal diversity includes Protozoans (84 species), Platyelminthes (47 species), Nematodes (140 species), Annelids (36 species), Arthropods (1206 species), Pisces (143 species), Amphibians (14 species), Reptiles (30 species), Aves (461 species) and Mammals (30 species).

Some of the important flora endemic and rare to Shivaliks is as follows:-

Ougenia, Butea, Caesulia, Glassocardia, Hibiscus hoshiarpuriensis (Paul & nayar), Argyrolobium album, Rumex punjabensis, Polycarpos prostratum, waltheria indica, Zoxyphylla, Campylotropus ericarpa. Acer oblongum wall ex. D.C. var. membranaceum Bannerji is identified as endangered species and Coropegia pusilla (wight el Arn) as rare in the red Data Book of Indan Plants volume. (Nayar and sastry, 1987). "International Union for Nature Conservation" recommended 'insitu' conservation of these species by declaring them protected, preventing their uprooting, attempting regeneration in similar ecological habitats and preservation of their seeds. The endangered species of fauna in Punjab accordingly to Prasad (1984) of ZSI are Desert cat, Caracal and those belonging to Vulnerable category are wolf, clawless otter, Leopard cat, Panthat, Black buck and Chinkara. 29 species are under schedules of Indian Wild Life Protection Act 1972 and 8 species are under CITES.

Indian pangolin, Wolf, Chital, Chinkara olter and smooth Indian olter are rare and long eared hedgehog, Flying fox, Indian porcupine, Indian fox, Hog deer, Barking deer are reported to have low populations.

Some birds such as yellow welted lapwing, Painted stork, Crested honey buzzard, Golden eagle, King Vulture, Horned owl have become rare.

49 **Research Plots:**

Forest Research Circle, Hoshiarpur has conducted various research trials in Block Forests Kharkan and Pandori Mindomind. At Kharkan therein an area of about 40 hectares various research trials pertaining to Germplasm Bank of about 17 species has been conducted. These seed orchards are of immense value in the field of forestry research. Similarly at Pandori Mindomind over an area of about 10 hectares various research trials of Drek, Eucalyptus and Shisham have been conducted.

50 **Detail of Research Plots:**

FOREST RESEARCH STATION, KHARKAN, HOSHIARPUR

Location	:	Hoshiarpur-Una Road, (16 Km from Hoshiarpur)
Longitude	:	31 ⁰ -31'-03.585" N
Latitude	:	75 ⁰ -49'-07.696" E
Altitude	:	353.40 MSL
Type of soil	:	Sandy loam
Species	:	17 (Kahir, Bamboo, Poplar, Eucalyptus, Neem, Shisham, Toon, Suanjana, Sukhchain, Harar, Kikar, Teak, Burma- Drek, Silveroak, Jatropha, Bahera, Drek & Amla)
Area	:	40 hectares

Sr.	Partiulars of Research plot at F.R.S.,	Month of	No. of	No.	Are	Spacing
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No.	Khrkan	planting	clones/ progenies/ treatments	of plants	a in Ha.	in meter
1	Germplasm Bank of khair	September-02	95	760	1.70	6x4
2	Bambusetum	July-03	10	70	0.25	5x5
3	Bambusetum of Dendorocalamus	August-03	4	68	0.25	5x5
4	Germplasm Bank of Poplar	February-03	116	954	2.00	3x4
5	Trial of Half sib-families of CPTs of Eucalyptus	November-03	21	1220	1.00	3x2
6	Clonal seed orchard of Khair	August-04	40	400	1.00	6x4
7	Germplasm bank of Neem	February-04	43	2031	2.50	4x3
8	Germplasm bank of Melia azedarach(Drek)	March-04	55	1095	1.60	4x3
9	Germplasm bank of Eucalyptus	October-04	10	505	0.75	4x3
10	Demonstration plot of Clonal Eucalyptus	March-05	12	720	0.60	3x2
11	Trial of clonal Poplar	March-05	12	768	1.53	5x4
12	Germplasm bank of Shisham	March-05	66	990	1.20	3x3
13	Experiment on control of Lantana	July-05	4	1536	1.50	3x3
14	Germplasm bank of Toon	July-05	25	330	0.40	4x3
15	Trial of Bamboos tissue cultured v/s seedlings	August-05	2	1067	1.00	3x3
16	Germplasm bank of khair	July-05	43	300	0.40	4x3
17	Experiment on effect of irrigation & Fertilization on Teak	July-05	12	1456	1.00	3x2
18	Gertu16plasm bank of Amla	August-05	70	1260	1.20	3x3
19	Germplasm bank of Melia composite (Burma Drek)	August-05	174	3004	4.00	4x3
20	Progeny trial of Jatropha	August-05	16	647	0.50	3x2.5
21	Silver oak plantation	April-06		418	0.40	3x2
22	Germplasm bank of Bahera	August-06	70	1881	2.50	4x3
23	Germplasm bank of Amla	October-06	41	1923	1.80	3x3
24	Germplasm bank of Suanjana	March-07	71	1870	2.5	3x4
25	Germplasm bank of Harar	September-07	62	1761	2.25	3x4
26	Trial of Melia composita	08/2010	21	525	0.50	3x3
27	Trial of Pongamia Pinnata	09/2010	49	588	0.51	3x3

FOREST RESEARCH STATION, PANDORI MINDO-MIND, HOSHIARPUR

Location	:	Hoshiarpur-Tanda Road, Giganwal Pandori link Road
Longitude	:	31 ⁰ -31'-32.181" N
Latitude	:	75 ⁰ -49'-00.048" E
Altitude	:	263.0 MSL
Type of soil	:	Sandy loam
Species	:	Shisham, Eucalyptus, Drek, Subabool, Poplar, Burma Drek.
Area	:	10 hectares

Sr. No.	Partiulars	Area in ha	Clones/Treatments	Spacing in Meters	Date of Planting	Total Plants	Remarks
1	C.S.O of Shisham	2	27	5x5	Aug-97	897	386 after culling
2	Germplasm Bank of Shisham	1.6	53	5x4	Jul-02	475	
3	Poplar Nursery (W-39 & G-48)				02-2012		
4	Trial of Eucalyptus CPTs/clones	0.5	21	3x2	21-6-06	756	
5	Clonal trial of Shisham	0.9	36	3x3	9-10-06	972	
6	Trial of Eucalyptus CPTs/clones	0.6	30	3x2	23-10-06	810	
7	Trial of Eucalyptus (FRI)	0.11	6	3x3	18-12-06	120	
8	C.S.O. of Shisham	2.00	30	3x4	Sep.07	1673	
9	Trial of Melia Composita	0.40	28	3x3	8/2009	444	
10	Trial of Shisham	0.55	49	3x3	8/2009	588	
11	Trial of Eucalyptus	0.11	24	3x2.5	--/2011	144	
12	Trial of Melia Composita	0.18	12	3x3	8/2010	198	
13	Trial of Eucalyptus	.22	4	3x2	2/2005/ 6/2006	560/360	

Table No. 15

**Area Statement of Block Forests Working Circle
Garhshankar Forest Division**

S.No	Range	H.B No	Name of forest	Legal status	Notification No	Hill	Foot hill	Bela	Mand	Total
1.	Garhshankar	340	Khani	P.F	2099-Ft-III-70/10509 dt 27.06.70	-	-	10.10	-	10.10
2.	-do-	341	Harjiana	P.F	6536-Ft-III-70/9177 dt 08.06.71	6.50	5.00	-	-	11.50
3	-do-	356	sauli	P.F	4009-Ft-III-70/ 1693 dt 27.01.70	-	8.10	22.2	-	30.30
4.	-do-	357	Birampur	P.F	5350-Ft-III-69/ 1465 dt.27.01.70	-	48.90	31.10	-	80.80
5.	-do-	359	Shahpur	P.F	-do-	-	35.90	-	-	35.90
6.	-do-	362	Chak Gujran	P.F	-do-	-	14.40	12.10	-	26.20
7.	-do-		Sadowal	P.F	96-Ft-III-71 5703 dt 6.4.71	-	-	1.20	-	1.20
Total						6.50	76.10	112.60	-	195.20
8.	Balachaur	194	Jagewal	P.F	4039-Ft-III-69/ 1476 dt.27.01.70	-	-	18.60	-	18.60
9.	-do-	196	Rohnu	P.F	6982-Ft-III-70/9180	-	-	5.60	-	5.60
10.	-do-	215	Siana	P.F	4039-Ft-III-70/	-	-	39.20	-	39.20

11.	Balachaur	216	Ghamaur	P.F	1476 dt.27.01.70 4039-Ft-III-70/	-	-	23.80	-	23.80
12.	-do-	376	Chewchh arian kalan	P.F	1476 dt. 27.01.70 1605-Ft-III-71/1460 dt 16.08.71	151.80	89.00	9.70	-	250.50
13	-do-	44	8 Hedon	U.C	-	-	-	-	13.40	13.40
14	-do-	449	Bahipur	U.C	-	-	-	-	15.80	15.80
15	-do-	459	Aulipur	UC	-	-	-	-	27.50	27.50
16	-do-	462	Khoje	U.C	-	-	-	-	46.10	46.10
Total						151.80	89.00	96.90	102.80	440.50
17	Mahilpur	40	Parsota	P.F	2099-Ft-III-70/10509 dt 27.06.70	-	-	21.50	-	21.50
18	-do-	334	Kangar	P.F	6536-Ft-III-70/9177 dt 8.06.71	-	-	117.30	-	117.30
Total						-	-	138.80	-	138.80
19	Kathagarh	203	Kathagarh	P.F	4377-Ft-III-73/7178 dt 10.05.77	-	-	17.80	-	17.80
20	-do-	388	Takrala	P.F	1605-Ft-69/1476	-	-	19.80	-	19.80
21	-do-	394	Ballawal	P.F	-do-	-	116.90	50.60	-	167.50
22	-do-	397	Tandoh	P.F	4039-Ft-III-69/1476 dt 27.01.70	-	-	31.60	-	31.60
23	-do-	399	Nath Nangal	P.F	488-Ft-III-71/8164 dt. 20.5.71	-	-	27.50	-	27.50
24	-do-	401	Mehndipur	P.F	-do-	4.50	-	-	-	4.50
25	-do-	413	Raipur	P.F	860-Ft-III-71/1454 dt. 16.8.71	13.80	19.40	24.3	-	57.50
26	-do-	414	Nangal	P.F	6361-Ft-III-71/14541 dt. 15.1.71	65.20	-	9.30	-	74.50
27	-do-	415	Fatehpur	P.F	-do-	40.50	-	44.50	-	85.00
28	-do-	416	Bandh	P.F	860-Ft-III-71/1454 dt. 16.8.71	28.30	30.30	47.40	8.50	114.50
29	-do-	418	Asron	P.F	-do-	-	-	23.10	-	23.10
30	-do-	419	Relmajra	P.F	-	14.20	6.10	-	4.40	24.70
31	-do-	420	Bramad rel	U.C	-	-	-	-	11.80	11.80
32	-do-	241	Baramad Bela Tejowal	U.C	-	-	-	-	20.20	20.20
33	Kathgarh	422	Bela Tejowal	U.C	-	-	-	-	4.90	4.90
34	-do-	428	Bacchwan	U.C	-	-	-	53.80	-	53.80
35	-do-	429	Bhedian	U.C	-	-	-	-	10.50	10.50
36	-do-	432	Attari	U.C	-	-	-	-	13.40	13.40
37	-do-	433	Hassanpur	U.C	-	-	-	-	1.20	1.20
Total						186.30	172.70	329.90	74.90	763.80
Grand Total Garhshankar Division						344.60	337.80	678.20	117.70	1538.30

Table No. 16
Area Statement of Block Forests Working Circle
Hoshiarpur Forest Division

S.No	Range	H.B No	Name of forest	Legal status	Notification No	Hill	Foot hill	Bela	Mand	Total
1.	Hoshiarpur	229	BassiJana	P.F	5067-Ft-III-69/1473 dt 27.01.70	-	-	38.30	-	38.30
2.	-do-	296	Patti	P.F	-do-	-	-	58.20	-	58.20
3.	-do-	332	Narunagal	P.F	-do-	-	-	10.10	-	10.10
4.	-do-	332	Dhirowal	P.F	6755-Ft-III-70/-5937 dt 16.1.71	-	-	56.20	-	56.20
5.	-do-	344	Mehlanwali	U.C	-	-	-	31.20	-	31.20
6.	-do-	354	Jahankhelan	P.F	1896-Ft-III-69/3137 dt 25.6.69	-	-	281.60	-	281.60
7.	--do-	363	Bassi Purani	P.F	067-Ft-III-69/-1473 dt 27.1.70	-	-	56.70	-	56.70
8.	-do-	366	Satiyal	P.F	2099-Ft-III-70/10509 dt 27.6.70	-	-	80.10	-	80.10
9.	-do-	368	Thathal	P.F	6984-Ft-III-70/9568 dt 11.6.71	-	-	40.90	-	40.90
10.	-do-	379	Bhagowal	P.F	5068-Ft-III-69/1473 dt. 27.1.70	-	-	11.70	-	11.70
11.	-do-	492	Nari	P.F	39(6)Ft-III-80/13646 dt 7.8.80	31.90	-	-	-	31.90
12.	-do-	493	Baroti	P.F	2099-Ft-III-70/105.09 dt 27.6.70	414.40	-	-	-	414.40
13.	-do-	494	Chohal	P.F	5352-Ft-III-69/	36.40	-	-	27.10	63.50
14.	-do-	495	Saleran	U.C	-	55.8	-	-	-	55.8
15.	-do-	496	Dada	U.C	-	1699.70	-	-	522.10	2221.80
16.	-do-	497	Manjhi	P.F	178-Ft-II-71/5383 dt 31.3.71	1159.00	89.00	89.00	-	1337.00
17.	-do-	498	Nara	P.F	863-Ft-III-71/1451 dt. 16.8.71	709.00	54.70	48.50	-	812.20
18.	-do-	499	Tharoli	P.F	903-Ft-II-71/5041 dt 16.11.71	305.10	40.40	133.50	-	479.00
19.	-do-	500	Dallewal	P.F	6423-Ft-III-70/5038 dt 16.6.71	20.20	-	78.90	-	99.10
20.	-do-	501	Patitari	P.F	2099-Ft-III-70/10509 dt 27.6.70	40.40	-	38.00	-	78.40
21.	-do-	502	Kharkan	P.F	2099-Ft-III-70/10509 dt 27.6.70	136.20	-	-	-	136.20
22.	-do-	503	Chaksadhu	P.F	6423-Ft-III-70/5038 dt. 16.11.71	-	-	-	-	-
Total						4608	148.10	1602.60	-	6394.80
23.	Haryana	52	Darapur	U.C	-	-	-	20.20	-	20.20
24.	-do-	173	Pandori	P.F	5351-Ft-III-60/1082 dt 20.1.70	-	-	11.30	-	11.30
25.	-do-	379	MindoMind Bhagowal	P.F	5067-Ft-III-69/1473 dt 27.1.70	-	-	11.70	-	11.70
26.	-do-	414	Bassi Babu Khan	P.F	5067-Ft-III-69/1472 dt 27.1.70	-	-	17.00	-	17.00
27.	-do-	416	Shebhepur	P.F	-do-	-	-	31.00	-	31.00
28.	-do-	417	Bassi Ballow	P.F	1896-Ft-III-69/3137 dt 25.6.69	-	-	23.50	-	23.50
29.	-do-	420	Khepran	P.F	5067-Ft-III69/1473 dt 27.1.70	-	-	11.30	-	11.30
30.	-do-	421	Bhelela	U.C	-	-	-	26.3	-	26.3
31.	-do-	422	Mastiwal	P.F	508-Ft-III-71/6086 dt. 19.4.71	-	-	5010	-	5010

32.-do-	428	Aima	P.F	1890-Ft-III-69	-	-	11.70	-	11.70
33.-do-	433	Chacknur Ali	P.F	3137 dt 25.6.69 903-Ft-III-71/ 5041 dt 16.11.71	-	-	10.50	-	10.50
34.-do-	435	Chackladhian	P.F	708-Ft-III-71/ 9565 dt 11.6.71	-	-	110.80	-	110.80
35.-do-	438	Sehjowal	P.F	6754-Ft-III-70/ 1279 dt 27.1.71	-	-	9.30	-	9.30
36.-do-	439	Musa	P.F	6754-Ft-III-70/1279 dt 27.1.71	-	-	5.20	-	5.20
37.-do-	440	Pandori Atwal	P.F	508-Ft-III-71/ 6086 dt 19.4.71	-	-	14.60	-	14.60
38.-do-	441	Shekha	P.F	-do-	-	-	57.1	-	57.1
39.-do-	470	Ramtatwali	P.F	4819-Ft-III-70/ 8156 dt 20.5.71	-	-	75.2	-	75.2
40.-do-	478	Janauri	U.C	-	34.80	-	-	-	34.80
Total					34.80	-	496.80	-	531.60
41.Mehngro wal	1483	Patiari	P.F	863-Ft-III-71/ 1451 dt. 16.8.71	466.20	-	16.20	-	482.40
42.-do-	484	Hussainpur	P.F	5067-Ft-III-69/ 1473 1473 dt 27.1.70	39.2	-	38.5	-	77.70
43.-do-	485	Rehmapur	P.F	5352-Ft-III-69/ 1085 dt 20.1.70	185.40	-	-	-	185.40
44.-do-	486	Malot	P.F	658-Ft-III-72/ 10917 dt 4.5.72	144.50	-	-	-	144.50
45.-do	487	Takhni	P.F	863-Ft-III-71/ 1451 dt 16.8.71	199.5	2.00	-	-	201.50
Total					1034.80	2.00	54.70	-	1091.50
46.Dholbaha	425	Dehra	P.F	1896-Ft-III-69/ 3137 dt 25.6.69	-	-	34.30	-	34.30
47.-do-	444	Bhatoli	U.C	-	-	-	101.60	-	101.60
48.-do-	463	Aruhi	P.F	3856-Ft-III-72/ 10697 dt 30.4.73	34.40	-	38.40	-	72.80
49.-do-	464	Narur	U.C	-	21.80	-	-	-	21.8
50.-do-	468	Katohar	P.F	5067-Ft-III-69/ 1471 dt 27.1.70	178.00	-	91.50	-	269.50
51.-do-	470	Ramtatwali	P.F	4819-Ft-III-70/ 76.00	76.00	-	-	-	-
52.-do-	471	Dehrian	P.F	8156 dt 20-5-71 39(8)-Ft-III-84/ 1361.20	1361.20	-	-	-	-
53.-do-	472	Kukanet	U.C	7879 dt 19.11.84 -	39.20	-	-	-	39.20
54.-do-	473	Barikhad	P.F	1585-Ft-III-78/16471 dt. 4.8.78	191.80	-	-	-	191.80
Total					1902.40	-	265.80	-	2168.20
Grand Total Hoshiarpur Forest Division					7580.10	186.10	2419.90	-	10186.10

Table No. 17

**Area Statement of Block Forests Working Circle
Dasuya Forest Division**

S.No	Range	H.B No	Name of forest	Legal status	Notification No	Hill	Foot hill	Bela	Mand	Total
1.	Badla	139	Sarinpur	P.F	1981-Ft-III-69/3148 dt 25.06.69	-	-	8.50	-	8.50
2.	-do-	141	Manak	P.F	-do-	-	-	8.10	-	8.10
3.	-do-	152	Main ka pind	P.F	-do-	-	-	11.70	-	11.70
4.	-do-	153	Saggaran	P.F	6339-Ft-III-70/ 6089 dt 19.4.71	-	-	24.30	-	24.30
5.	-do-	170	Reghwal	P.F	1981-Ft-III-69-3148 dt. 25.6.69	-	-	15.40	-	15.40
6.	-do-	224	Behbpwal	P.F	695-Ft-III-71-5380 dt. 31.3.71	-	15.00	44.80	-	59.80
7.	-do-	559	Mawa	P.F	1600-Ft-III-78/3836 dt. 22.2.79	15.00	15.00	-	-	30.00
8.	-do-	634	Toi Makkowal	P.F	6339-Ft-III-70/6089 dt. 19.4.71	-	-	13.30	-	13.30
9.	-do-	635	Saido pajji	P.F	1981-Ft-III-69/3148 dt. 25.6.89	-	-	6.50	-	6.50
10.	-do-	636	Bassa	P.F	3856-Ft-III-72/10697 dt. 30.4.73	-	21.00	-	-	21.00
11.	-do-	640	Dadial	P.F	761-Ft-III-73/7696 dt. 26.3.73	-	-	26.70	-	26.70
Total						15.00	51.00	159.30	-	225.30
12.	Dasuya	94	Ajmer	P.F	6983-Ft-III-70/9572 dt.11.6.71	-	-	17.00	-	17.00
13.	-do-	132	Kaharwali	P.F	6753-Ft-III-70/8833 dt. 2.6.71	-	-	11.30	-	11.30
14.	-do-	142	Usma Shaheed	P.F	6983-Ft-III-70/9571 dt. 11.6.71	-	-	1.60	-	1.60
15.	-do-	447	Badhayia	U.C	-	-	-	-	177.00	177.00
16.	-do-	455	Kathana	U.C	-	-	-	-	235.22	235.22
17.	-do-	459	Bararowal	U.C	-	-	-	-	14.73	14.73
18.	-do-	460	Begur	U.C	-	-	-	-	25.82	25.82
19.	-do-	463	Naichak	U.C	-	-	-	-	14.37	14.37
20.	-do-	468	Balesaran	U.C	-	-	-	-	23.64	23.64
21.	-do-	469	Budh	U.C	-	-	-	-	12.22	12.22
22.	-do-	470	Chhanian	U.C	-	-	-	-	14.60	14.60
23.	-do-	473	Soodan	U.C	-	-	-	-	33.36	33.36
24.	-do-	475	Daimpur	U.C	-	-	-	-	48.25	48.25
25.	-do-	476	Bhoja	U.C	-	-	-	-	39.27	39.27
26.	-do-	477	Galowal	U.C	-	-	-	-	13.76	13.76
27.	-do-	486	Mehla	U.C	-	-	-	-	34.65	34.65
28.	-do-	487	Rajpur	U.C	-	-	-	-	13.60	13.60
29.	-do-	497	Maini Mana	U.C	-	-	-	-	50.68	50.68
30.	-do-	498	Bhimi mirja Khan	U.C	-	-	-	-	70.24	70.24
31.	-do-	515	Ahdulla pur	U.C	-	-	-	-	61.53	61.53
32.	-do-	516	Kulla	U.C	-	-	-	-	207.28	207.28
33.	-do-	517	Fatta	U.C	-	-	-	-	120.72	120.72
34.	-do-	518	Habib Chak	U.C	-	-	-	-	36.51	36.51
35.	-do-	519	Kotstar khan	U.C	-	-	-	-	15.70	15.70
36.	-do-	520	Gandhowal	U.C	-	-	-	-	193.31	193.31
37.	-do-	524	Salempur	U.C	-	-	-	-	114.80	114.80

38-do-	525	Talhi	U.C	-	-	-	-	237.50	237.50	
39.-do-	-	Bhojjan	U.C	-	-	-	-	1.21	1.21	
				Total				29.90	1809.97	1839.87
40.	Mukerian	242	Murapur	U.C	-	-	-	22.26	22.26	
41.-do-	256	Kalowal	U.C	-	-	-	-	1.37	1.37	
42.-do-	335	Naharpur	U.C	-	-	-	-	2.70	2.70	
43 -do-	409	Molla	U.C	-	-	-	-	26.31	26.31	
44.-do-	413	Halar	U.C	-	-	-	-	22.00	22.00	
				janardan						
45. -do-	417	Haler	U.C	-	-	-	-	21.86	21.86	
				dalpat						
46.-do-	423	Negtaboyr	U.C	-	-	-	-	137.89	137.89	
47 -do-	425	Hoshiarpur	U.C	-	-	-	-	5.38	5.38	
48 -do-	427	Naushera	U.C	-	-	-	-	2.02	2.02	
49.-do-	433	Mauli	U.C	-	-	-	-	37.65	37.65	
50.-do-	435	Bagroi	U.C	-	-	-	-	3.76	3.76	
51. -do-	437	Baupur	U.C	-	-	-	-	22.60	22.60	
52 -do-	438	Mirpur	U.C	-	-	-	-	17.00	17.00	
				Total				322.80	322.80	
53.-do-	579	Chattarpur	P.F	666-Ft-III-73/	261.80	-	-	-	261.80	
				9074. dt 4.4.73						
Grand Total Dasuya Forest Division				261.80	51.00	189.20	2132.77	2649.77		

Table No. 18
Abstract of Total Growing Stock of Block Forests Working Circle
Garhshankar Forest Division

Species	No & Vol.	V	IV	III	II-A	II-B	I-A	I-B	TOTAL
Shisham	No	11993	2677	2529	921	34	0	0	18154
	Vol	599.65	401.55	1390.95	1013.10	68.00	0.00	0.00	3473.25
Euc	No	8173	10271	10073	5518	1476	171	0	35682

	Vol	408.65	1540.65	5540.15	6069.80	2952.00	478.80	0.00	16990.05
Khair	No	17865	18469	8011	35	0	0	0	44380
	Vol	893.25	2770.35	4406.05	38.50	0.00	0.00	0.00	8108.15
Kikkar	No	205	541	158	45	0	0	0	949
	Vol	10.25	81.15	86.90	49.50	0.00	0.00	0.00	227.80
Poplar	No	0	66	131	111	54	23	35	420
	Vol	0.00	9.90	72.05	122.10	108.00	64.40	122.50	498.95
Misc	No	20544	12351	4763	2151	249	52	6	40116
	Vol	1027.20	1852.65	2619.65	2366.10	498.00	145.60	21.00	8530.20
Total	No	58780	44375	25665	8781	1813	246	41	139701
	Vol	2939.00	6656.25	14115.75	9659.10	3626.00	688.80	143.50	37828.40

Table No. 19
Dasuya Forest Division
Abstract of Total Growing Stock of Block Forests Working Circle
Classwise No & Vol. M³

Species	No & Vol.	V	IV	III	IIA	IIB	IA	I B	Total
Shisham	No	5082	4582	3098	1112	126	96	34	14130
	Vol.	254.10	687.30	1703.90	1223.20	252.00	268.80	119.00	4508.30
Kikar	No	18	23	33	7	2	2	1	86
	Vol.	0.90	3.45	18.15	7.70	4.00	5.60	3.50	43.30
Euc	No	14836	17322	25619	4114	1899	367	525	64682
	Vol.	741.80	2598.30	14090.45	4525.40	3798.00	1027.60	1837.50	28619.05
Misc	No	15168	18299	22185	4118	2176	306	498	62750
	Vol.	758.40	2744.85	12201.75	4529.80	4352.00	856.80	1743.00	27186.60
Khair	No	5082	4587	4590	381	13	9	3	14665
	Vol.	254.10	688.05	2524.50	419.10	26.00	25.20	10.50	3947.45
Chill	No.	0	0	0	17	25	26	16	84
	Vol.	0.00	0.00	0.00	18.70	50.00	72.80	56.00	197.50
Total	No	40186	44813	55525	9749	4241	806	1077	156397
	Vol.	2009.30	6721.95	30538.75	10723.90	8482.00	2256.80	3769.50	64502.20

Table No. 20
Abstract of Total Growing Stock of Block Forests Working Circle
Hoshiarpur Forest Division

Species	No.& Vol.	V	IV	III	II-A	II-B	I-A	I-B	TOTAL
Euc	No	35774	60052	63778	31242	6232	3915	68	201061
	Vol	1788.7	9007.8	35077.9	34366.2	12464	10962	238	103904.6
Khair	No	630217	461859	129385	21265	1989	658	297	1245670
	Vol	31510.85	69278.85	71161.75	23391.5	3978	1842.4	1039.5	202202.85
Shisham	No	40749	37392	25509	19112	5347	2624	119	130852
	Vol	2037.45	5608.8	14029.95	21023.2	10694	7347.2	416.5	61157.1
Kikar	No	7163	6342	4478	2968	313	221	0	21485
	Vol	358.15	951.3	2462.9	3264.8	626	618.8	0	8281.95
Misc	No	579887	291163	70078	1391	-	-	-	942519
	Vol	28994.35	43674045	38542.90	1530.10	-	-	-	112741.80
Chil	No	1515	8479	12449	12161	3903	1908	333	40748
	Vol	75.75	1271.85	6846.95	13377.10	7806.00	5342.40	1165.50	35885.55
Fruit	No	24	30	9	15	21	22	30	151
	Vol	1.20	4.50	4.95	16.50	42.00	61.60	105.00	235.75
Total	No	1295329	865317	305686	88154	17805	9348	847	2582486
	Vol	64766.45	129797.6	168127.3	96969.4	35610	26174.4	2964.5	524409.6

Table No. 21
Felling Programme of Block Forests Working Circle
Garhshankar Forest Division

S.No	Range	Name of forest	Area (Ha)	Year of felling
1.	Garhshankar	Khani	10.10	2012-2013
2.	Balachaur	Jagewal	18.60	-do-
3.	Mahilpur	Parsota	21.50	-do-
4.	Kathgarh	Bela Tejowal	4.90	-do-
5.	Garhshankar	Harjiana	11.50	-do-
6.	Balachaur	Rohnu	5.60	2013-2014
7.	Mahilpur	Kangar	117.30	-do-
8.	Kathgarh	Baccwan	53.80	-do-
9.	Garhshankar	Sauli	30.30	-do-
10.	Balachaur	Siana	39.20	-do-
11.	Kathgarh	Kathgarh	17.80	-do-
12.	Kathgarh	Bhedian	10.50	2014-2015
13.	Garhshankar	Birampur	80.80	-do-
14.	Balachaur	Ghamaur	23.80	-do-
15.	Kathgarh	Takrala	19.80	-do-
16.	Kathgarh	Attari	13.40	-do-
17.	Garhshankar	Shahpur	35.90	-do-

S.No	Range	Name of forest	Area (Ha)	Year of felling
18.	Balachaur	Chandiani Kalan	250.5	2015-2016
19.	Kathgarh	Ballowal I	67.50	-do-
20.	Kathgarh	Hassanpur	1.20	-do-
21.	Garhshankar	Chack gujran	10.10	2016-2017
22.	Balachaur	Hedon	13.40	-do-
23.	Kathgarh	Tandon	31.60	-do-
24.	Garhshankar	Saidowa	11.20	-do-
25.	Balachaur	Bahipur	15.80	2017-2018
26.	Kathgarh	Natha Nangal	27.50	-do-
27.	Balachaur	Aulipur	27.50	-do-
28.	Kathgarh	Mehndipur	4.50	-do-
29.	Balachaur	Khoje	46.10	-do-
30.	Kathgarh	Raipur	57.50	2018-2019
31.	-do-	Nangal	74.50	-do-
32.	-do-	Fatehpur	85.00	-do-
33.	-do-	Bandh	114.50	-do-
34.	-do-	Asron	23.10	2019-2020
35.	-do-	Relmajra	24.70	-do-
36.	-do-	Bramad	11.80	2020-2021
37.	- do-	Baramad	20.20	-do-
		Bela Tejowal		
38.	Garhshankar	Khani	10.10	2021-2022
39.	Balachaur	Jagewal	18.60	-do-
40.	Mahilpur	Parsota	21.50	-do-
41.	Kathgarh	Bela Tejowal	4.90	-do-
42.	Garhshankar	Harjiana	11.50	-do-
43.	Balachaur	Rohnu	5.60	2022-2023
44.	Mahilpur	Kangar	117.30	-do-
45.	Kathgarh	Baccwan	53.80	-do-
46.	Garhshankar	Sauli	30.30	-do-
47.	Kathgarh	Bhedian	10.50	2023-2024
48.	Garhshankar	Birampur	80.80	-do-
49.	Balachaur	Ghamaur	23.80	-do-
50.	Kathgarh	Takrala	19.80	-do-
51.	Kathgarh	Attari	13.40	-do-
52.	Garhshankar	Shahpur	35.90	-do-
53.	Balachaur	Chandinai Kalan	25.00	2024-2025
54.	Mahilpur	Ballowal	167.50	-do-
55.	Kathgarh	Hassanpur	1.20	-do-
56.	Garhshankar	Chack gujran	10.10	-do-
57.	Balachaur	Hedon	13.40	-do-
58.	Kathgarh	Tandon	31.60	2025-2026
59.	Garhshankar	Sadhowal	1.20	-do-
60.	Balachaur	Bahipur	15.80	-do-
61.	Kathgarh	Natha Nangal	27.50	-do-
62.	Balachaur	Aulipur	27.50	-do-
63.	Kathgarh	Mehndipur	4.50	-do-
64.	Balachaur	Khoje	46.10	-do-
65.	Kathgarh	Raipur	57.50	-do-

S.No	Range	Name of forest	Area (Ha)	Year of felling
66.	Kathgarh	Nangal	74.50	2026-2027
67.	-do-	Fatehpur	85.00	-do-
68.	-do-	Bandh	114.50	-do-
69.	-do-	Asron	23.10	-do-
70.	-do-	Relmajra	24.70	-do-
71.	-do-	Bramad	11.80	-do-
72.	-do-	Baramad	20.20	-do-
		Bela Tejowal		

Table No. 22
Felling Programme of Block Forests Working Circle
Hoshiarpur Forest Division

Sr No	Range	Name of Forest	Area	Year of felling
1	Hoshiarpur	Kharkan	38.30	2012-13
2	Haryana	Darapur	20.20	-do-
3	Meghnagrowal	Patari	482.40	-do-
4	Dholbaha	Dehra	34.30	2013-14
5	Hoshiarpur	Patti	58.20	-do-
6	Haryana	Padori Mindo Mind	11.30	-do-
7	Meghnagrowal	Hussainpur	77.70	-do-
8	Dholbaha	Bhatoli	101.60	2014-15
9	Hoshiarpur	Narunagal	10.10	-do-
10	Haryana	Bhagowal	11.70	-do-
11	Hoshiarpur	Dhirowal	56.20	-do-
12	Meghnagrowal	Rehmapur	185.40	2015-16
13	Dholbaha	Baruhi	72.80	-do-
14	Haryana	Bassi Babu Khan	17.00	-do-
15	Hoshiarpur	Mehlanwali	31.20	-do-
16	Meghnagrowal	Malout	144.50	2016-17
17	Dholbaha	Narur	21.80	-do-
18	Hoshiarpur	Jahankhelan	281.60	2016-17
19	Dholbaha	Shehzadpur	1.00	2017-18
20	Dholbaha	Takhni	201.50	-do-
21	Dholbaha	Kataur	269.50	-do-
22	Haryana	Bassi Ballo	23.50	-do-
23	Dholbaha	Ramtatwali	76.00	2018-19
24	Hoshiarpur	Bassi Purani	56.70	-do-
25	Haryana	Khepran	11.30	-do-
26	Hoshiarpur	Satial	80.10	-do-
27	Haryana	Mastiwal	50.10	-do-
28	Dholbaha	Barikhad	191.80	-do-
29	Dholbaha	Dehrian	1361.20	2019-20
30	Hoshiarpur	Tathal	40.90	-do-
Sr No	Range	Name of Forest	Area	Year of felling

31	Hoshiarpur	Nari	31.90	-do-
32	Meghnagrowal	Bhagowal	11.70	-do-
33	Haryana	Bhaliala	26.3	2020-21
34	Dholbaha	Kukanet	39.20	-do-
35	Haryana	Aima	11.70	-do-
36	Haryana	Chak Nur Ali	10.50	-do-
37	Hoshiarpur	Baroti	414.40	-do-
38	Haryana	Chackladian	110.80	2021-22
39	Hoshiarpur	Chohal	63.50	-do-
40	Haryana	Sehjowal	9.30	-do-
41	Haryana	Musa	5.20	2022-23
42	Hoshiarpur	Dada	2221.80	-do-
43	Hoshiarpur	Saleran	55.8	2023-24
44	Haryana	Padori Atwal	14.60	-do-
45	Hoshiarpur	Manjhi	1337.00	-do-
46	Haryana	Shekhan	57.10	2024-25
47	Hoshiarpur	Nara	812.20	-do-
48	Haryana	Ramtatwali	75.20	-do-
49	Hoshiarpur	Tharoli	479.00	2025-26
50	Haryana	Janauri	34.80	-do-
51	Hoshiarpur	Dallewal	99.10	-do-
52	Hoshiarpur	Patiari	78.40	2026-27
53	Hoshiarpur	Kharkan	136.20	-do-
54	Hoshiarpur	Chack Sadhu		-do-

Table No. 23
Felling Programme of Block Forests Working Circle
Dasuya Forest Division

S. No	Range	Name of forest	Area (in ha)	Year of felling
1.	Badla	Sarinpur	8.50	2012-2013
2.	Dasuya	Ajmer	17.00	-do-
3.	Mukerian	Muradpur	22.26	-do-
4.	Badla	Manak	8.10	-do-
5.	Dasuya	Kaharwali	11.30	-do-
6.	Mukerian	Kalowal	1.37	2013-2014
7.	Badla	Main ka pind	11.70	-do-
8.	Dasuya	Usmaan Shaheed	1.60	-do-
9.	Mukerian	Naharpur	2.70	2014-2015
10.	Badla	Saggaran	24.30	-do-
11.	Dasuya	Badhayia	177.00	-do-
12.	Mukerian	Molla	26.31	-do-
13.	Badla	Reghwal	15.40	2015-2016

S. No	Range	Name of forest	Area (in ha)	Year of felling
14.	Dasuya	Kathana	235.22	-do-
15.	Mukerian	Halar- -Janardhan	22.00	-do-
16.	Badla	Behbowal	59.80	-do-
17.	Dasuya	Bararowal	14.73	2016-2017
18.	Mukerian	Halar dalpat	21.86	-do-
19.	Badla	Mawa	30.00	-do-
20.	Dasuya	Begpur	25.82	2017-2018
21.	Mukerian	Mehtabpur	137.89	-do-
22.	Badla	Toi makkowal	13.30	-do-
23.	Dasuya	Naichak	14.37	-do-
24.	Mukerian	Hoshiarpur	5.38	2018-2019
25.	Badla	Saido pajji	6.50	-do-
26.	Dasuya	Balesaran	23.64	2019-2020
27.	Mukerian	Naushera	2.02	-do-
28.	Badla	Bassa	21.00	-do-
29.	Dasuya	Badhu barker	12.22	-do-
30.	Mukerian	Mauli	37.65	2020-2021
31.	Badla	Dadial	26.70	-do-
32.	Dasuya	Chhanian	14.60	-do-
33.	Mukerian	Bagroi	3.76	2021-2022
34.	Dasuya	Soodan	33.36	-do-
35.	Mukerian	Baupur	22.60	-do-
36.	Dasuya	Daimpur	48.25	-do-
37.	Mukerian	Mirpur	17.00	2022-2023
38.	Dasuya	Bhoja	39.27	-do-
39.	Mukerian	Chattarpur	261.80	-do-
40.	Dasuya	Galowal	13.76	-do-
41.	Dasuya	Mehla	34.65	2023-2024
42.	-do-	Rajpur	13.60	-do-
43.	Dasuya	Maini mana	50.68	2023-2024
44.	-do-	Bhimi mirja khan	70.24	-do-
45.	-do-	Ahdullapur	61.53	2024-2025
46.	-do-	Kulla	207.28	-do-
47.	-do-	Fatta	120.72	-do-
48.	-do-	Habib chak	36.51	2025-2026
49.	-do-	Kotstar khan	15.70	-do-
50.	-do-	Gandhowal	193.31	-do-
51.	-do-	Salempur	114.80	2026-2027
52.	-do-	Talhi	237.50	-do-
53.	-do-	Bhojjan	1.21	-do-
		Total	2649.77	

WORKING PLAN FOR ROAD WORKING CIRCLE

51. General Constitution

This working circle covers all the roads namely National and State High-ways, district and other roads within the civil jurisdiction of Hoshiarpur district and part of Nawanshehar District covered under this Working Plan except the Zila Parishad roads. The total area under this working circle is 571.75 Ha. It is not possible to follow a specific silvicultural system as the nature of crop is uneven and mixed consisting of all ages. Special care will be taken to protect the natural regeneration wherever occurs and economically important species with emphasis on fast growing varieties of short rotation shall be preferred over long rotation crops for planting. Area of regeneration should be specially protected preferably by fencing. Natural regeneration will be supplemented by artificial planting where there are sizeable gaps. The detail of area categorywise in Garhshankar, Hoshiarpur and Dasuya Forest Divisions is as follows:-

Name of Division	S.No	Type of Roads	Length in Kms.	Area (ha.)
Garhshankar	1	N.H. Ways	-	-
	2	State Highways.	83.8	108.14
	3	M.D. Roads.	33.0	41.1
	4	Link Roads.	13.0	12.0
Hoshiarpur	1	N.H. Ways	-	-
	2	State Highways.	106.3	108.17
	3	M.D. Roads.	47.6	32.86
	4	Link Roads.	63.2	47.66
Dasuya	1	N.H. Ways	55.9	99.07
	2	State Highways.	14.4	13.44
	3	M.D. Roads.	59.0	59.71
	4	Link Roads.	76	49.6

The distribution of these roads range wise has been given in Chapter I **Table 8, 9 & 10**.

51A Special objects of Management

The special objects of management of this working circle are: -

1. To enhance the ecosystem services and to provide local livelihood opportunities to the local communities and conservation and restoration of biodiversity.
 2. To improve environment for the betterment of people and to control pollution through forests by planting suitable species on different sites.
 3. To enhance the aesthetic value of the area by improving the landscape.
 4. To increase the growing stock for production of timber, fuelwood and fodder to meet the needs of the local population.
 5. To reclaim Alkaline/Saline with the suitable species.
 6. To provide sufficient food and shelter to wild life especially, birds.
 7. To manage the forests in such a way so as to get optimum sustainable yields.
52. **Series, Blocks & Compartments**

i) **Series:-** Most of the areas of this working circle have been progressively engulfed into ever increasing habitations on the out skirts of towns and villages, mushrooming commercial establishments and industrial focal points. Therefore the creation of unregulated series with the objectives of conservation was found to be not yielding desired results as these areas could not be managed strictly according to the objectives because of other considerations such as movement of traffic, public convenience, Prevention of damage to life and property when the trees are either uprooted or broken at the time of heavy winds, rains etc. Going by the expansion of habitations, commercial establishment and industries, most of the areas have to be unrealistically brought under unregulated working series. Therefore the unregulated working series is not created being redundant and the objectives of unregulated series are taken care of in the prescription of annual yield, marking, felling and planting rules. All the areas have been allocated to only one series.

ii) **Block and Compartments:-** There are no blocks in strip forests. The numbering and the nomenclature of compartments has already been explained in para no.35.

ii) **Area Statements:-** Details of compartments allotted to this working circle are given in **Table No 24,25 & 26.**

53. **Character of Vegetation**

The crop in general is irregular in respect of composition, density and age. In many road strips, there is middle aged Shisham crops with some gaps near habitation while some areas the shisham crop is reaching maturity or already reached maturity. In the last one or two decades, very few shisham plantations have been raised due to which the younger age classes are very less in road strips. Some of the roads have beautiful pole crop of Eucalyptus while some reaches have mature crop of Eucalyptus. In Eucalyptus areas the gaps are less prominent and the crop is patchy in some areas. Some of the strips have middle aged Kikar crop also.

54. **Analysis and Evaluation of Crop**

The entire growing stock down to 60 cms GBH (O.B) was enumerated in the year 2007-2008 in Garhshankar, 2010-11 in Hoshiarpur and Dasuya Forest Divisions. The results of the enumeration are required to be entered in the compartment history files. It was not considered necessary to re-enumerate the area for the purpose of this Working Plan since the data is the most recent and results of above enumeration has been relied upon for calculating the growing stock and the yield, although some increment must have been put up by the growing stock in due course of time.

The detail of growing stock species-wise in this working circle is given in **Table No.27, 28 and 29.**

55. **Method of treatment**

Since the crop is uneven and mixed age with varying density, the method of treatment will be tailored as per the end use of the crop and above mentioned factors. Since the marking rules have been specified so they will be strictly followed while treating the crop. Even the thinning will be carried out as has been specified in the marking rules. Due to over all usefulness of the species shisham will be preserved for future use. Only dead, dry and fallen trees of shisham will be marked for felling. Root suckers of shisham coppice of eucalyptus and advance growth of other species will be retained behind the avenue line. The area marked for felling will be planted in the following years:-

- i) Avenue lines will necessarily have ornamental, shade giving and commercially important species and ornamental shrubs. The trees of avenue line will be those which have long physical rotation.
- ii) For rest of the areas shisham will be preferred over other species. Other species will replace shisham only in case the edaphic factors prevent its growth.
- iii) The areas which come under felling will be artificially planted. The plantation will be tended in 2nd, 3rd and 4th years. The list of blank areas is attached in table No 35,36 & 37 Although the time taken for planting blanks will depend upon the physical targets but efforts will be made to cover the blank areas as early as possible.

Regeneration will commensurate with felling and felling will be done only after ensuring budgetary provision for regeneration.

56. **Silvicultural System**

As the crop in almost all the forests consists of different age classes gradation and species, silvicultural system to be followed is "Selection cum improvement felling". In no circumstances clear felling will be allowed in any forest. The marking shall be done in manner that the canopy remains closed so as to preserve soil and water conservation in the area.

57. **Rotation**

In view of complete ban of felling of green shisham trees, the demand for big sizes eucalyptus and kikar wood has increased considerably. Punjab State Forest Development Corporation is demonstrating the usefulness of eucalyptus wood for construction and furniture making, which contributed in increasing demand for big size eucalyptus timber. The rotation of

these two species has therefore been increased to 25 years. The rotation of various species along with expected g.b.h. is given below:-

S. No	Name of Spp.	Rotation in years.	Exploitable girth at breast height (o.b) in cms.
1	Shisham	60	180
2	Kikar	25	105
3	Eucalyptus	25	130
4	Mulberry	15	75
5	Poplar	12	75
6	Misc.	60	180

58. Calculation of yield

The yield will be controlled by volume. According to the Simmon's modification of Von Mental's formula, the annual yield of various species on the basis of growing stock works out to be as follows:

$$Y = V(2r/r^2 - x^2)$$

Garhshankar Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
V=Volume of growing Stock	2193.15	619.45	6080.75	5201.65	14095.00
r= Rotation in years.	60	25	25	60	
x=Age in years.	20	10	10	20	
Corresponding to Which enumeration has been done.					
Y= Annual yield in Cubic meters	82.243	58.995	579.1190	195.062	915.419
Annual yield Prescribed.	41.122	29.498	289.5595	97.531	457.7105
	(dead & dry)				

Hoshiarpur Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
V=Volume of growing Stock	981.90	682.50	26032.40	2825.05	30521.85
R= Rotation in years.	60	25	25	60	-
X=Age in years. Corresponding to Which enumeration has been done.	20	10	10	20	-
Y= Annual yield in Cubic meters	36.82	65.00	2479.28	105.94	2687.04
Annual yield Prescribed.	18.41	32.50	1239.64	52.97	1343.52
	(dead & dry)				

Dasuya Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
V=Volume of growing Stock	3362.50	1056.25	18826.45	13884.90	37130.10
r= Rotation in years.	60	25	25	60	-
x=Age in years.	20	10	10	20	-
Corresponding to Which enumeration has been done.					
Y= Annual yield in Cubic meters	126.095	100.595	1792.995	520.684	2540.369
Annual yield Prescribed.	63.047 (dead & dry)	50.2975	896.4975	260.342	1270.184

According to the guidelines issued by the Govt. of India, the prescribed yield is to be kept not more than 50% of the calculated yield. There is a complete ban on the felling of green shisham and chill trees in Punjab; therefore no annual yield for green Shisham and miscellaneous species has been prescribed. The prescribed yield includes dead and dry volume.

Yield obtained through felling of dead dry and fallen trees and through developmental fellings as a consequence of diversion cases under Forest Conservation Act, 1980 etc will be deducted from the prescribed annual yield of that particular species and only the balance will be obtained by marking green trees. If the volume harvested on account of dead, dry and fallen trees and other development related fellings exceeds the annual yield prescribed, then the excess volume so felled shall be accounted for against the prescribed annual yield for that species in the following year. As a measure of conservation the annual yield is not prescribed for green Shisham. The volume obtained on account of felling dead, dry and fallen shisham trees shall be adjusted against the prescribed yield of Eucalyptus, Kikar and Misc. in that order for that year and if the volume is still in excess, then the excess volume of that year will be adjusted in the next year in the same afore mentioned order. The marking for felling will be done according to priority list given under the felling programme. The dead, dry and fallen trees of any species will not be allowed to stand on strips even if the total prescribed yield for a particular species is already realized and these dead, dry and fallen trees will be harvested on priority basis to avert loss of revenue as a result of degradation of timber quality. Such volume realized of dead, dry and fallen trees in excess of annual prescribed yield in case of Eucalyptus, Kikar and Miscellaneous will be deducted from the prescribed yield of that particular species in that particular year and if the yield is still in excess then the same will be adjusted in the following years as mentioned above.

Felling programme for Road working circle is given in **table No. 30, 31 and 32.**

59. **Marking Rules**

The following marking rules shall be observed:-

- 1) All trees in the coupe shall be marked except the following:
 - a) Trees falling in areas in the vicinity of habitations, industries etc.
 - b) Avenue line on either side of the road. However, thinning may be carried out if necessary.
 - c) Advance growth of all spp. Upto 60 cms. Girth at breast height.
 - d) Green Shisham trees of all age classes.
 - e) Healthy green trees of fruit and ornamental species, Rajain, Teak, Bahera, Arjan, neem, ficus, Sohanjana, Bohar and Pipal.
- 2) All dead dry, diseased, wind-fallen trees shall be marked.
- 3) Trees obstructing traffic shall be marked.
- 4) Trees falling in the vicinity of habitations extending 100 meters on either side of the abadi shall be worked on physical rotation.
- 5) Trees which by location or alignment i.e. dangerously leaning trees posing threat to life or property may be marked in exceptional cases after a field visit by an officer not below the rank of Deputy D.F.O.
- 6) Thinning is prescribed only under written orders of the D.F.O concerned in exceptional cases where the growth of crop is deficient as compared to the standard volume table of that species.

60. **Method of executing fellings**

- 1) Trees should be felled away from road to avoid blockage.
- 2) Trees should be lopped before felling if there is likelihood of damage to transmission lines or advance growth.
- 3) Eucalyptus should be cut slanting with the help of saw and stump height should not be more than 10-15 cms.
- 4) Felling of Eucalyptus should not be done in dry months and during rains.

- 5) In case of uprooting of trees, the pits should be refilled.

61. Planting Rules

- 1) Planting should be done according to inter-departmental rules.
- 2) In avenue line only shade bearing, wind firm trees having ornamental value or fruit and with longer rotation should be planted. If the soil and other conditions permit, only one species will be planted in a compartment length in the avenue line.
- 3) At village bus stops one or two pipal, bohar, mango, neem or jamun trees will be planted on either side.
- 4) Small sized ornamental trees to be necessarily planted around habitations and below transmission lines.
- 5) Coppice shall be tended on priority basis.
- 6) Renegeration will commensurate with felling.

62. Felling programme

Felling programme has been prepared in the shape of a priority list given in the **table 30,31 and 32**. The felling programme is to be strictly followed keeping in view the marking rules, felling rules and over all prescribed yield and adjustments suggested thereon. Felling of the mature trees which out lived rotation on priority basis may be harvested to the extent of prescribed annual yield on various strips.

63. Planting Programme

The areas felled will be planted in the following year. Utmost importance will be given for planting the existing gaps. Encroachments prevalent in the road strips will be removed on priority basis and planted immediately, Plantations may be raised preferably on either left or right side of the strip in a year to facilitate movement of cattle and avoid damage as a consequence and the other side be planted later. The plantations will be fully protected by barbed wire fence. The choice of the species should be made according to the site and the other relevant factors. The list of blank areas has also been given in tables **33, 34 & 35** and should be planted at the earliest to avoid any encroachments and disputes.

64. Sharing of timber proceeds of trees along the roads:-

Department of Forest and wild Life Preservation, Government of Punjab vide notification no. 29/25/98-FtIII 14024 dated 3rd Nov. 2000 issued Punjab Apportionment of Trees Rules 2000 for sharing of timber proceeds of trees in the road strips with the farmers whose land

is lying adjacent to the Government owned road strips. As per this notification the sharing in case of different categories of Roads strips is as under: -

S. No	Types of roads	Percentage of share	Remarks
1	All government owned roads except National highways, State highways and link roads	50%	The % of share will be calculated after deducting afforestation charges from the sale price.
2	State Highway	20%	-----do-----
3	National Highway	5%	-----do-----
4	Link Roads	100%	-----do-----

The field staff will ensure that the responsibilities to be performed by the adjoining farmers in prevention of theft of the trees, grazing and protection of the strip from fires etc. are fully met with as per the notification . The share of sale price of the trees will be given to only those farmers who execute an agreement with regard to the performance of duties and act on the agreement dutifully. The copy of the notification is given as Annexure No. III.

65. **Diversion of Forest Land on road strips:**

The road strips have been notified as protected forest and Forest Conservation Act, 1980 is applicable in the case of all such notified road strip forests. The road strips were found to be under temporary encroachment at many places. The habitations are expanding on the road side to a large extent, many commercial establishments have cropped up and innumerable industrial units have also mushroomed along the road strips on account of which large area of these strips is not available for plantations. Action to be taken as per rules for removal of encroachment. Large scale diversion of road strips rendering road strips unavailable for forest purpose should be minimized so that adequate vegetation cover is ensured for the purpose of environmental benefits such as mitigating the harmful effects of pollution specially of vehicular nature.

Table No. 24
Compartment Allotment of Road Working Circle Strip Forests
Garhshankar Forest Division

S No.	Name of Strip Forest	Compt No.		
			Length in Kms	Area in ha
	S.H Roads			
1	Ropar-Hoshiarpur	1PL,2-5R, 6A L&R, 6B L&R (KM 28-30), 7-10 L&R, 11 A L&R (KM 51-54),11B L&R ,12-14 L&R,15 A L&R, 15 B &R (KM 71-72),16A L&R Note :- 1PL, 2-5R one side length. Strip Area only on one side.	149.200	97.1
2	Chandigarh-	14PL&R, 15 L&R 16 PL&R	18.400	11.04

	Jalandhar			
	Total		167.600	108.1

S No.	Name of Strip Forest	Compt No.	Length in Kms	Area in ha
	M.D Roads			
3	Garhshankar-Nurpur Bedi	1-4 L&R, 5 PL&R	44.000	26.40
4	Garhshankar-Nawanshehar	1-2 PL&R	10.000	8.70
5	Garhshankar-Banga	1L&R,2PL&R	12.000	6.00
	Total		66.000	41.10
6	Kathgarh-Rattewal	L&R	12.000	6.00
7	Balachaur-Garhi	L&R	6.000	3.60
8	Mahilpur-Maily	2 L&R	8.000	2.40
	Total		26.000	12.0
	G.Total		238.600	161.2

Table No. 25
Compartment Allotment of Road Working Circle Strip Forests
Hoshiarpur Forest Division

S No.	Name of Strip Forest	Compt No.	Length in Kms	Area in ha
	S.H Roads			
1	Ropar-Hoshiarpur	16P,L&R, 17-18 L&R, 19 L&R (90-91)	24.800	14.88
2	Hoshiarpur-Dasuya	1A L&R (2-4), 1B L&R, 2-3 L&R 4AL&R (15-16), 4B L&R, 5 L&R 6A L&R, 6BL&R, 5 (29-30) 7 L&R	66.000	25.70
3	Hoshiarpur-Tanda	1P L&R, 2-3 L&R, 4A L&R 4BL&R (16-17), AL&R	42.000	26.00
4	Jalandhar-Hoshiarpur	6-7 L&R, 8B L&R,(38-39) A L&R	28.4010	20.15
5	Jalandhar-Hoshiarpur (Abodened)	6 L&R	4.600	3.68
6	Jalandhar-Bharwain	9A L&R (41-42), 9B L&R 10-11 L&R, 12PL&R	36.800	9.76
7	Hoshiarpur-Byepass	10 L&R	10.000	8.00
	Total		212.600	108.17
	M.D Roads			
8	Hoshiarpur-Phagwara	1-4 L&R,5P L&R	40.000	17.50
9	Hoshiarpur-Una	1-3 L&R,4P L&R	35.600	7.52
10	Bulalowal-Bhogpur	1-2 L&R	19.600	7.84
	Total		95.200	32.86
11	Hoshiarpur- Mehangrawal	1-3 L&R	22.000	8.80
12	Haryana-Dholbaha	1-3 L&R	28.000	12.60

13	Haryana-Shamchurasi	1-4 L&R	34.000	18.70
14	Tanda-Dholbaha	2P L&R,3 L&R	14.400	3.96
15	Garhdiwal-Darapur	L&R	12.000	1.29
16	Dholbaha-Manhota-koi	1-2 L&R	16.000	2.40
	Total		126.400	47.66
	G.Total		432.200	188.69

Table No. 26
Compartment Allotment of Road Working Circle Strip Forests
Dasuya Forest Division

S No.	Name of Strip Forest	Total Compt No.		
			Length in Kms	Area in ha
	S.H Roads			
1	Jalandhar-Pathankot, N.H.I.A	7 P L&R, 8A L&R, 8 B L&R (38-40) 9 A L&R (40-42) 9 B L&R, 10-14 L&R 15 A L&R (70-72) 15 B L&R,16-17 L&R	101.800	89.07
2	Tanda Bypass	8-9 P L&R	10.000	10.00
	Total		111.800	99.07
	S.H. Roads			
3	Hoshiarpur-Dasuya SH-24.	8 L&R (40-41/4)	12.800	3.84
4	Hoshiarpur-Tanda S.H. 24	5 P L&R,6-7 L&R	16.000	9.60
	Total		28.800	13.44
	M.D. Roads			
5	Tanda-Begowal –Shri Hargobind Pur.	10 L&R, IAL & R (0-1) Kms 2-3 L&R	26.000	18.00
6	Mukerian-Talwara	1-5 L&R, 6 A L&R (25-27 Kms)	54.000	17.61
7	Dasuya-Hazipur	1-4 L&R	38.000	23.30
	Total		118.000	59.71
	Link Roads			
8	Tanda-Garhdiwal	1-2 L&R	14.000	2.80
9	Dasuya-Maini.	1A L&R,(0-1 km) 1B L&R, 2-3 L&R	30.000	13.35
10	Maini-Pacca Pull	L&R	4.000	0.60
11	Tanda-Dholbaha	1-2 L&R	14.000	3.85
12	Dasuya-Budhubarkat	L&R	12.000	3.00
13	Hazipur-Jandwal	1-4 L&R	34.000	13.60
14	Mukerian-Naushera	1-2 L&R	16.000	4.80
15	Talwara-Mubarak Pur	L&R	12.000	3.60
16	Jhir Di Khuee-Datarpur	L&R	4.000	3.60
17	Badla Link Rd.	L&R	12.000	2.40
	Total		152.000	49.60
	G.Total		410.600	221.82

Table No. 27
Garhshankar Forest Division
Abstract of total growing stock

Road Working Circle

Species	No & Vol.	V	IV	III	II-A	II-B	I-A	I-B	TOTAL
Shisham	No &	217	421	575	465	274	133	106	2191
	Vol.	10.85	63.15	316.25	511.5	548	372.4	371	2193.15
Kikar	No &	27	49	65	111	70	58	43	423
	Vol.	1.35	7.35	35.75	122.1	140	162.4	150.5	619.45
Euc	No &	174	582	1091	1213	712	423	412	4607
	Vol.	8.7	87.3	600.05	1334.3	1424	1184.4	1442	6080.75
Misc	No &	2735	3390	1846	1075	431	192	274	9943
	Vol.	136.75	508.5	1015.3	1182.5	862	537.6	959	5201.65
Total	No &	3153	4442	3577	2864	1487	806	835	17164
	Vol.	157.65	666.30	1967.35	3150.40	2974.00	2256.80	2922.50	14095.00

Table No. 28
Hoshiarpur Forest Division
Abstract of total growing stock
Road Working Circle

Species	No & Vol.	V	VI	III	II-A	II-B	I-A	I-B	TOTAL
Euc	No	1024	3195	4459	4873	3540	2024	1412	20527
	Vol	51.2	479.25	2452.45	5360.3	7080	5667.2	4942	26032.4
Khair	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Shisham	No	295	243	232	222	116	48	55	1211
	Vol	14.75	36.45	127.6	244.2	232	134.4	192.5	981.9
Kikar	No	67	71	134	134	104	38	38	586
	Vol	3.35	10.65	73.7	147.4	208	106.4	133	682.5
Misc	No	2426	2059	864	333	209	108	238	6237
	Vol	121.3	308.85	475.2	366.3	418	302.4	833	2825.05
Chil	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Fruit	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Total	No	3812	5568	5689	5562	3969	2218	1743	28561
	Vol	190.6	835.2	3128.95	6118.2	7938	6210.4	6100.5	30521.85

Table No. 29
Dasuya Forest Division
Abstract of total growing stock

Road Working Circle

Species	No&Vol.	V	IV	III	IIA	IIB	IA	I B	Total
Shisham	No	3200	2698	2690	823	77	65	22	9575
	Vol.	160.00	404.70	1479.50	905.30	154.00	182.00	77.00	3362.50
Kikar	No	1500	1453	1030	75	26	11	9	4104
	Vol.	75.00	217.95	566.50	82.50	52.00	30.80	31.50	1056.25
Euc	No	11116	13883	17502	2715	770	227	400	46613
	Vol.	555.80	2082.45	9626.10	2986.50	1540.00	635.60	1400.00	18826.45
Misc	No	9116	11211	13025	2470	835	39	25	36721
	Vol.	455.80	1681.65	7163.75	2717.00	1670.00	109.20	87.50	13884.90
Total	No	24932	29245	34247	6083	1708	342	456	97013
	Vol.	1246.60	4386.75	18835.85	6691.30	3416.00	957.60	1596.00	37130.10

Table No. 30

**Felling Programme for Road Working Circle
Garhshankar Forest Division**

Sr No	Name of Range	Name of Forest Strip	Compartment No.	Year of felling
1	Garhshankar	Gsr-Banga Road	1L	2012-2013
2	Garhshankar	Ropar-H. Pur-Rd	15 AL	2012-2013
3	Balachaur	Gsr-Banga Road	1R	2012-2013
4	Kathgarh	Ropar-H. Pur-Rd	15 AL	2013-2014
5	Garhshankar	Ropar-H. Pur-Rd	16 PL	2013-2014
6	Mahilpur	Ropar-H. Pur-Rd	6 AR	2014-2015
7	Balachaur	Ropar-H. Pur-Rd	16 PR	2014-2015
8	Kathgarh	Ropar-H. Pur-Rd	4R	2015-2016
9	Garhshankar	Ropar-H. Pur-Rd	14 PL	2015-2016
10	Mahilpur	Ropar-H. Pur-Rd	7L	2016-2017
11	Mahilpur	Ropar-H. Pur-Rd	14 PR	2016-2017
12	Garhshankar	Ropar-H. Pur-Rd	7R	2017-2018
13	Balachaur	Ropar-H. Pur-Rd	2R	2017-2018
14	Garhshankar	Ropar-H. Pur-Rd	9L	2018-2019
15	Kathgarh	Ropar-H. Pur-Rd	8L	2018-2019
16	Mahilpur	Kathgarh-Rattewal Link Rd	L	2019-2020
17	Balachaur	Ropar-H. Pur-Rd	3R	2019-2020
18	Kathgarh	Kathgarh-Rattewal Link Rd	R	2020-2021
19	Garhshankar	Ropar-H. Pur-Rd	13L	2021-2022
20	Garhshankar	Ropar-H. Pur-Rd	11BR	2021-2022
21	Mahilpur	Ropar-H. Pur-Rd	13R	2022-2023
22	Garhshankar	Ropar-H. Pur-Rd	14PR	2022-2023
23	Balachaur	Ropar-H. Pur-Rd	10L	2023-2024
24	Kathgarh	Ropar-H. Pur-Rd	10R	2023-2024
25	Garhshankar	Ropar-H. Pur-Rd	14PL	2024-2025
26	Garhshankar	Ropar-H. Pur-Rd	9R	2024-2025
27	Garhshankar	Balachaur-Garhi Link Road	L	2025-2026
28	Garhshankar	Gsr-Nsr-Rd	1PL	2025-2026
29	Garhshankar	Gsr-Nsr-Rd	2PL	2026-2027
30	Garhshankar	Gsr-Nurpur-Bedi Rd	3L	2026-2027

Table No. 31

**Felling Programme for Road Working Circle
Hoshiarpur Forest Division**

Sr No	Name of Range	Name of Forest Strip	Compartment No.	Year of felling
1	Hoshiarpur	Hoshiarpur-Tanda bye pass	10R	2012-13
2	Hoshiarpur	Jalandhar- Hoshiarpur	6R	2012-13
3	Hoshiarpur	Hoshiarpur Bye Pass	10L	2012-13
4	Hoshiarpur	Jalandhar- Hoshiarpur Rd	1R	2013-14
5	Haryana	Bullowal-Bhogpur Rd	5L	2013-14
6	Hoshiarpur	Jalandhar- Hoshiarpur Rd	6AL	2014-15
7	Haryana	Bullowal-Bhogpur Rd	2R	2014-15
8	Haryana	Bullowal-Bhogpur Rd	3L	2015-16
9	Haryana	Bullowal-Bhogpur Rd	2L	2015-16
10	Haryana	Tanda-Dholbaha Rd	4L	2016-17
11	Haryana	Haryana-Shamchurasi Rd	1 L & R	2016-17
12	Hoshiarpur	Jalandhar- Hoshiarpur Rd	4BR	2017-18
13	Haryana	Haryana-Dholbaha Rd	7L	2017-18
14	Haryana	Tanda-Dholbaha Rd	6AR	2017-18
15	Haryana	Bullowal-Bhogpur Rd	1 L & R	2019-20
16	Haryana	Bullowal-Bhogpur Rd	2 L & R	2019-20
17	Haryana	Haryana-Shamchurasi Rd	2 L & R	2019-20
18	Haryana	Garhdiwala-Darapur Rd	1,2 L & R	2020-21
19	Haryana	Haryana-Dholbaha Rd	1 L & R	2021-22
20	Haryana	Haryana-Dholbaha Rd	2 L & R	2022-23
21	Hoshiarpur	Hoshiarpur-Phagwara Rd	3R	2024-25
22	Haryana	Hoshiarpur-Dasuya Rd	17L	2024-25
23	Haryana	Hoshiarpur-Dasuya Rd	4R	2024-25
24	Haryana	Hoshiarpur-Dasuya Rd	1L	2024-25
25	Haryana	Hoshiarpur-Tanda Rd	5R	2024-25
26	Haryana	Hoshiarpur-Tanda Rd	3L	2024-25
27	Haryana	Hoshiarpur-Dasuya Rd	3R	2024-25
28	Haryana	Hoshiarpur-Dasuya Rd	7R	2025-26
29	Hoshiarpur	Hoshiarpur-Phagwara Rd	7L	2025-26
30	Hoshiarpur	Hoshiarpur-Phagwara Rd	7R	2025-26
31	Hoshiarpur	Ropar-Hoshiarpur	3R	2025-26
32	Haryana	Hoshiarpur-Dasuya Rd	6L	2026-27
33	Haryana	Hoshiarpur -Dasuya Rd	2L	2026-27
34	Haryana	Hoshiarpur-Dasuya Rd	1L	2026-27
35	Haryana	Hoshiarpur-Dasuya Rd	3 L	2026-27
36	Hoshiarpur	Ropar-Hoshiarpur	17R	2026-27
37	Hoshiarpur	Ropar-Hoshiarpur	16PL	2026-27

Table No. 32
Felling Programme for Road Working Circle
Dasuya Forest Division

Sr No	Name of Range	Name of Forest Strip/Road	Compartment No.	Year of felling
1	2	3	4	5
1	Dasuya	Tanda-Srihargobindpur Road	4BL	2012-13
2	Dasuya	Tanda-Dolbaha Road	1L	--do--
3	Mukerian	Jalandhar-Pathankot Road	16L	--do--
4	Dasuya	Jalandhar-Pathankot Road	11R	--do--
5	Dasuya	Tanda-Dolbaha Road	1R	--do--
6	Mukerian	Mukerian-Dolbaha Road	1R	--do--
7	Mukerian	Jalandhar-Pathankot Road	17L	2013-14
8	Mukerian	Dasuya-Hazipur Road	2PL	--do--
9	Dasuya	Jalandhar-Pathankot Road	10R	--do--
10	Mukerian	Dasuya-Hazipur Road	2PR	--do--
11	Mukerian	Jalandhar-Pathankot Road	16R	--do--
12	Dasuya	Tanda-Srihargobindpur Road	2L	--do--
13	Dasuya	Jalandhar-Pathankot Road	10L	2014-15
14	Dasuya	Tanda-Dolbaha Road	2PL	--do--
15	Dasuya	Tanda-Gardiwala Road	1R	--do--
16	Dasuya	Jalandhar-Pathankot Road	11L	--do--
17	Mukerian	Jalandhar-Pathankot Road	17R	--do--
18	Mukerian	Mukerian-Talwara Road	3R	--do--
19	Dasuya	Dasuya-Budhu Barkat Road	R	2015-16
20	Dasuya	Jalandhar-Pathankot Road	14R	--do--
21	Mukerian	Dasuya-Hazipur Road	3R	--do--
22	Dasuya	Tanda-Dolbaha Road	2PR	--do--
23	Dasuya	Hoshiarpur-Dasuya Road	8R	--do--
24	Dasuya	Jalandhar-Pathankot Road	8AR	2016-17
25	Dasuya	Tanda-Srihargobindpur Road	1BR	--do--
26	Mukerian	Mukerian-Naushera Road	1L	--do--
27	Dasuya	Jalandhar-Pathankot Road	9BR	--do--
28	Mukerian	Mukerian-Talwara Road	2R	--do--
29	Mukerian	Mukerian-Talwara Road	1L	2017-18
30	Dasuya	Tanda bye pass	9PR	--do--
31	Dasuya	Jalandhar-Pathankot Road	12R	--do--
32	Dasuya	Tanda bye pass	8PR	--do--
33	Dasuya	Jalandhar-Pathankot Road	9BL	--do--
34	Dasuya	Jalandhar-Pathankot Road	12L	2018-19
35	Dasuya	Tanda bye pass	8PL	--do--
36	Dasuya	Jalandhar-Pathankot Road	8L	--do--
37	Mukerian	Dasuya-Hazipur Road	3L	--do--
38	Mukerian	Dasuya-Naushera Road	1R	--do--
39	Mukerian	Mukerian -Talwara Road	3L	--do--
40	Mukerian	Tanda bye pass	9PL	2019-20
41	Mukerian	Dasuya-Miani Road	2L	--do--
42	Mukerian	Jalandhar-Pathankot Road	15BL	--do--
43	Dasuya	Dasuya-Budhu Barkar Road	R	--do--
44	Mukerian	Hazipur-Jandwal Road	1L	--do--
45	Mukerian	Dasuya-Hazipur Road	1L	2020-21
46	Dasuya	Dasuya-Miani Road	3L	--do--

Sr No	Name of Range	Name of Forest Strip/Road	Compartment No.	Year of felling
1	2	3	4	5
47	Talwara	Jhir Di Khuee-Bhatpur Road	L	--do--
48	Dasuya	Tanda-Gardiwal Road	1L	--do--
49	Dasuya	Dasuya-Miani Road	3R	--do--
50	Mukerian	Hazipur-Jandwal Road	1R	--do--
51	Mukerian	Dasuya-Hazipur Road	1R	2021-22
52	Dasuya	Dasuya-Miani Road	2R	--do--
53	Talwara	Mukerian-Talwara Road	5L	--do--
54	Talwara	Mukerian-Talwara Road	5R	--do--
55	Mukerian	Dasuya-Hazipur Road	4L	--do--
56	Talwara	Mukerian-Talwara Road	4PL	--do--
57	Talwara	Jhir Di Khuee-Bhatpur Road	R	2022-23
58	Dasuya	Tanda-Shrihargobindpur Road	2R	--do--
59	Mukerian	Jalandhar-Pathankot Road	15BR	--do--
60	Dasuya	Hoshiarpur-Dasuya Road	8L	--do--
61	Mukerian	Dasuya-Hazipur Road	4L	--do--
62	Mukerian	Mukerian-Talwara Road	2L	--do--
63	Mukerian	Hazipur-Jandwal Road	2L	2023-24
64	Dasuya	Jalandhar-Pathankot Road	14L	--do--
65	Dasuya	Jalandhar-Pathankot Road	13R	--do--
66	Dasuya	Jalandhar-Pathankot Road	7PR	--do--
67	Mukerian	Mukerian-Naushera Road	2R	--do--
68	Dasuya	Jalandhar-Pathankot Road	7PL	--do--
69	Mukerian	Mukerian-Talwara Road	4PR	2024-25
70	Dasuya	Jalandhar-Pathankot Road	13L	--do--
71	Mukerian	Dasuya-Hazipur Road	2PL	--do--
72	Mukerian	Mukerian-Naushera Road	2L	--do--
73	Mukerian	Mukerian-Talwara Road	4PL	--do--
74	Dasuya	Dasuya-Miani Road	1BR	--do--
75	Dasuya	Dasuya-Miani Road	1BL	--do--
76	Mukerian	Hazipur-Jandwal Road	2R	2025-26
77	Mukerian	Mukerian-Talwara Road	4PR	--do--
78	Dasuya	Hoshiarpur-Tanda Road	6R	--do--
79	Dasuya	Hoshiarpur-Tanda Road	6L	--do--
80	Dasuya	Hoshiarpur-Tanda Road	5PL	--do--
81	Dasuya	Hoshiarpur-Tanda Road	5PR	--do--
82	Mukerian	Dasuya-Hazipur Road	2PR	2026-27
83	Mukerian	Hazipur-Jandwal Road	3R	--do--
84	Mukerian	Hazipur-Jandwal Road	3L	--do--
85	Badla	Badla Link Road	L	--do--
86	Badla	Badla Link Road	R	--do--
87	Dasuya	Tanda-Shrihargobindpur Road	3PL	--do--
88	Dasuya	Tanda-Shrihargobindpur Road	3PR	--do--

Table No. 33
List of Blank Strip Forest Area
Road Working Circle
Garhshanker Forest Division

Sr No	Name of strip forest	Compt No	Length in Kms	Area in Ha
	S.H. Roads			
1	Garhshankar-Nurpur Bedi	1-4L&R, 5PL&R	44.000	26.40
2	Garhshankar-Nawanshehar	1-2PL&R	10.000	8.70
3	Garhshankar-Banga	1L&R, 2PL&R	12.000	6.00
4	Kathgarh-Rattewal	L&R	12.000	6.00
5	Balachaur-Garhi	L&R	6.000	3.60
6	Mahilpur-Maily	2L&R	8.000	2.40

Table No. 34
List of Blank Strip Forest Area
Road Working Circle
Hoshiarpur Forest Division

Sr No	Name of strip forest	Compt No	Length in Kms	Area in Ha
	S.H. Roads			
1	Hoshiarpur-Tanda	1P L&R, 2-3 L&R, 4A L&R, 4B L&R, (16-17) 5P L&R	42.000	26.00
2	Jalandhar-Hoshiarpur	6-7 L&R, 8BL&R (38-39) AL&R	28.400	20.15
3	Jalandhar-Hoshiarpur (Abondened)	6L&R	4.600	3.68
4	Jalandhar-Bharwain	9AL&R (41-42) 9B L&R, 10-11 L&R, 12P L&R	36.800	9.76
5	Hoshiarpur Bypass	10 L&R	10.00	8.00
	M.D. Roads			
6	Hoshiarpur-Phagwara	1-4 L&R, 5P L&R	40.00	17.50
7	Hoshiarpur-Una	1-3 L&R, 4P L&R	35.600	7.52
8	Bulowal-Bhogpur	1-2 L&R	19.600	7.84
9	Hoshiarpur-Mehngrowal	1-3 L&R	22.00	8.80
10	Haryana-Chamchuraurasi	1-4 L&R	34.000	18.70
11	Tanda-Dolbaha	2P L&R, 3 L&R	14.400	3.96
12	Gardiwal-Darapur	L & P	12.00	1.29
13	Dolbaha-Manhota Koi	1-2 L&R	16.000	2.40

Table No. 35
List of Blank Strip Forest Area
Road Working Circle
Dasuya Forest Division

Sr No	Name of strip forest	Compt No	Length in Kms	Area in Ha
	S.H. Roads			
1	Tanda Bypass	8-9 P L&R	10.000	10.00
	M.D. Roads			
2	Tanda-Begowal- Shiri Hargobindpur	10 L&R, IA L&R (0-1)kms 2-3 L&R	26.000	18.00
	Link Roads			
3	Tanda-Gardiwal	1-2 L&R	14.000	2.80
4	Dasuya-Miani	1A L&R, (0-1km) 1 B L&R 2-3 L&R	30.000	13.35
5	Miani-Pacca Pull	L&R	4.000	0.60
6	Tanda-Dolbaha	1-2 L&R	14.000	3.85
7	Dasuya-Budhubarkat	L&R	12.000	3.00
8	Hazipur-Jandwal	1-4 L&R	34.000	13.60
9	Mukerian-Naushera	1-2 L&R	16.000	4.80
10	Talwara-Mubarkpur	L&R	12.000	3.60
11	Jhir Di Khuhee-Datarpur	L&R	4.000	3.60
12	Badla Link Road.	L&R	12.000	2.40

Chapter X

WORKING PLAN FOR CANAL WORKING CIRCLE

66. **General Constitution**

The strips along canals, distributaries, minors falling within Garshankar, Hoshiarpur and Dasuya Forest Divisions have been allocated to Canal Working Circle. It has an area of 593.12 ha and spread over 237.429 Kms, length of the canal system which includes B.D.C Shah Nehar and their distributaries.

66A **Special objects of Management**

The special objects of management of this working circle are:

1. To enhance the ecosystem services and to provide local livelihood opportunities to the local communities and conservation and restoration of biodiversity.
2. To improve the density and quality of forest cover by planting economically important tree species and adopting silvicultural techniques.
3. To provide wood for agricultural implements, house construction and raw material for based industries.
4. To improve the aesthetic value of the country side and provide better landscape.
5. To retain and plant such tree that may provide food and shelter to the Wildlife.

67. **Series, Blocks and Compartments:**

i) **Series:**

In this working circle series have not been constituted because most of the areas are away from the habitations and local conditions very much conducive for raising plantations on these strips. Adequate irrigation facilities are added advantage in this working circle. Most of the areas being adjacent to fertile farm lands can support good vegetation. The areas have been distributed in regulated working circle only.

ii) **Blocks & Compartments:**

There are no blocks. As already explained, 15 RDs length on either side constitutes one compartment and sides are denoted by the letter L & R for left and right sides respectively.

68. **Character of vegetation:**

The crop varies in composition, age and density. There are pure stands of shisham eucalyptus, Kikar and poplar in short stretches, however, mixture of these species is also not uncommon.

Shisham crop is generally middle aged to mature but younger classes are absent but for a few reaches where root suckers are in abundance. Eucalyptus and kikar crop fall under younger age groups. In some reaches poplar and under shade mulberry are also present.

69. **Analysis of the crop & evaluation:**

The entire growing stock has been enumerated down to the 60 cms. Girth at breast height. The growing stock present in this working circle in each of the divisions is furnished in the **table No 39,40&41**.

70. **Method of treatment:**

The compartments will be treated according to the silvicultural requirements of the crop which, as already explained is irregular in age and composition. Therefore the trees fit for felling will be felled, while dense pole crops will be thinned, the young plants will be spaced, singled or pruned as per the requirements of the crop. The coppice shoots will be adopted and tended. The root sucker of shisham will be tended and protected properly. The coupe will be inspected by the DFO who will explain to the field staff and treatment to be carried out and about the nature of earthwork to be done and the species to be planted. The planting will be done in the following year. Tending operations such as jungle clearance, kana stubbing, spacing, singling, pruning etc, for the advance growth shall be completed immediately after felling and will be before earthwork for planting. For planting in small gaps or in coppiced area, only tall plants shall be planted to avoid suppression in early stages. Regeneration will commensurate with felling and felling will be done only after ensuring budgetary provision for regeneration.

71. **Silvicultural System:**

As the crop in almost all the forests consists of different age classes gradation and species, silvicultural system to be followed is "Selection cum improvement felling". In no circumstances clear felling will be allowed in any forest. The marking shall be done in manner that the canopy remains closed so as to preserve soil and water conservation in the area.

72. **Rotation:**

The rotation of the various species has been fixed for producing large sized timber for which there is a great demand but acute shortage. The rotation for various species and their exploitable girth at breast height is given below:-

S. No	Name of species	Rotation in years	Exploitable girth at breast height in cms. (o.b)
1	Shisham	60	180
2	Kikar	25	105
3	Eucalyptus	25	130
4	Misc.	60	180

73. **Calculation of yield:**

The yield is to be controlled by volume and the annual coupe shall be worked out accordingly. Von Mental with Simmon's modification has been used to calculate the yield in each species separately as follows:

$$Y = V(2r/r^2 - x^2)$$

Where

V= Growing stock

r= Rotation of the species

x= Age in years corresponding 60 cm g.b.h up to which
Growing stock has been enumerated.

Y= Annual yield

Garhshankar Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
V= Volume of growing stock	1919.2	647.05	7983.85	10461.2	21011.3
R= Rotation in years.	60	25	25	60	-
X= Age in years Corresponding to which enumeration has been done.	20	10	10	20	-
Y= Annual yield in Cubic meters.	71.970	61.624	760.367	392.295	1286.256
Annual yield Prescribed (Dead & Dry)	35.985	30.812	380.183	196.148	643.128

Hoshiarpur Forest Division

	Shisham	Kikar	Euc.	Misc.	Khair	Total
V= Volume of growing stock	348.90	64.95	445.05	1154.90	-	2013.8
R = Rotation in years.	60	25	25	60	-	-
X= Age in years corresponding to which enumeration has been done.	20	10	10	20	-	-
Y= Annual yield in Cubic meters.	13.08	6.18	42.38	43.38	-	105.02
Annual yield prescribed.	6.54 (Dead & Dry)	3.09	21.19	21.69 (Dead & Dry)	-	52.51

Dasuya Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
V= Volume of growing stock	1607.15	2245.60	74.35	18878.10	22805.20
R = Rotation in years.	60	25	25	60	-
X= Age in years corresponding to which enumeration has been done.	20	10	10	20	-
Y= Annual yield in Cubic meters.	60.268	213.867	7.081	707.929	989.145
Annual yield prescribed.	30.134 (Dead & Dry)	106.9335	3.5405	353.9645	494.5725

According to the guidelines issued by the Govt. of India, the prescribed yield is to be kept not more than 50% of the calculated yield. There is a complete ban on the felling of green shisham and chill trees in Punjab; therefore no annual yield for green Shisham and miscellaneous species has been prescribed. The prescribed yield includes dead and dry volume.

But due to ban on felling of green shisham trees and some miscellaneous tree species and increase of rotation of eucalyptus and kikar from 10 years, 20 years to 25 years, lot of green felling has been saved. For the working circle as a whole the yield has been kept at 1/2 of the calculated yield keeping in view the poor stocking of the strips, less plantations under taken during the last working plan period and encroachments prevalent on canal strips rendering areas unavailable for plantations.

Yield obtained through felling of dead dry and fallen trees and through developmental fellings as a consequence of diversion cases under Forest Conservation Act, 1980 etc, will be deducted from the prescribed annual yield of that particular species and only the balance will be obtained by marking green trees. If the volume harvested on account of dead, dry and fallen trees and other development related fellings exceeds the annual yield prescribed, then the excess volume so felled shall be accounted for against the prescribed annual yield for that species in the following year. As a measure of conservation the annual yield is not prescribed for green

Shisham. The volume obtained on account of felling dead, dry and fallen shisham trees shall be adjusted against the prescribed yield of Eucalyptus, Kikar and Misc. species in that order for that year and if the volume is still in excess, then the excess volume of that year will be adjusted in the next year in the same afore mentioned order. The marking for felling will be done according to priority list given under the felling programme. The dead, dry and fallen trees of any species will not be allowed to stand on strips even if the total prescribed yield for a particular species is already realized and these dead dry and fallen trees will be harvested on priority basis to avert loss of revenue as a result of degradation of timber quality. Such volume realized of dead, dry and fallen trees in excess of annual prescribed yield in case of Eucalyptus, Kikar and Misc. species will be deducted from the prescribed yield of that particular species in that particular year and if the yield is still in excess then the same will be adjusted in the following year as mentioned above.

Priority list of the felling programme for canal working circle has been given in **table No.42, 43 & 44.**

74. **Marking Rules:**

The following marking rules shall be observed:-

- 1) All trees in the coupe shall be marked except the following: -
 - a) Avenue line along service roads. However, thinning may be carried out if necessary.
 - b) Advance growth of all species upto 45 cms. Girth at breast height.
 - c) Green Shisham trees of all age classes.
 - d) Healthy green trees of fruitand ornamental species Rajain, Teak, Bahera, Arjan, Neem, Ficus, Sohanjana, Bohar and Pipal.
 - e) Trees required for defence purpose.
- 2) All dead dry, diseased and wind-fallen trees shall be marked.
- 3) Trees obstructing traffic on service roads shall be marked.

75. **Method of executing fellings:**

- 1) Big sized trees should be lopped before felling to avoid damage to young regeneration.
- 2) Felling should be done with utmost care to avoid damage to transmission lines and advance growth.
- 3) Trees should be felled away from service roads to avoid blockage.
- 4) Eucalyptus should be cut slanting with saw and stump height should be kept 10-15 cms only to facilitate good coppice crop.

- 5) Felling of eucalyptus should not be allowed in summer months.
- 6) After the felling and extraction is complete, the pits should be refilled, brush wood etc should be burnt.

76. Planting Rules:

- 1) Planting should be done according to inter-departmental rules.
- 2) In avenue line only shade bearing, wind firm trees having ornamental or fruit value with longer rotation should be planted. If the soil and other conditions permit, single species will be planted in a compartment length in the avenue line.
- 3) At bridges near villages one or two pipal or bohar trees will be planted on either side.
- 4) Small sized ornamental trees to be necessarily planted around habitations and below transmission lines.
- 5) Coppice shall be tended on priority basis.
- 6) Regeneration will commensurate with felling.

The area for plantation will be cleared of bushes/ jungle growth and sarkanda etc. in advance and material burnt. The area will be fenced properly with the help of barbed wire and thorny brushwood especially near habitations. The earth work shall be done in advance and refilling shall be completed by 20th June. The species will be selected by the DFO according to the site and other relevant factors. Efforts will be made to increase the stocking of shisham by planting or tending natural regeneration and preserving old trees. In small blanks tall plants should be planted to avoid suppression at the early stage of establishment. Planting shall be completed at the earliest and while planting the following rules should be observed:-

1. Inter departmental rules should be observed strictly to avoid any dispute.
2. In the avenue line, only shade giving, wind firm trees with longer rotation such as Mango, Jamun, Tun, Neem, Arjun having ornamental or fruit value shall be planted.
3. Atleast 1-2 trees of Ficus species shall be planted in each R.D for providing fruit and shelter to the birds.
4. Near bridges and crossings ornamental trees in groups shall be planted. For improving landscape. One or two multipurpose trees such as bohar, pipal shall be planted.

77. Felling programme:

Felling programme has been prepared in the shape of a priority list given in the table **42,43 & 44**. The year of felling is to be strictly followed under taking felling in various strips on the basis of prescribed adjustments suggested thereon.

78. **Planting Programme:**

The areas felled will be planted in the following year. Utmost importance will be given for planting in the existing gaps. Encroachments prevalent in the canal strips will be removed on priority basis and planted immediately. The plantations will be fully protected preferably by barbed wire fence. The choice of the species should be made according to the site and the other relevant factors. The list of blank areas has also been given in **tables 45,46 &47** and the blank areas should be planted at the earliest to avoid any encroachment and consequent disputes.

Table No. 36
Garhshankar Forest Division
Compartment Allotment of Canal Working Circle

Sr No	Name of strip forest	Compt	Length in Km	Area in ha	Total Length Km	Area in
Canals						
1.	B.D canal	1-6 L&R,7PL&R	57.340	58.56	57.340	58.56
2.	Jalandhar branch	3PL&R, 4-10 L&R 11PL&R	73.200	109.93	73.200	109.93
3.	Mehndipur	L&R	0.914	0.32	0.914	0.32
4.	Denowal disty	L&R	10.674	3.74	10.674	3.74
5.	Mohanwal disty	L&R	1.220	0.43	1.220	0.43
Total			143.348	172.98	143.348	172.98

Table No. 37
Hoshiarpur Forest Division
Compartment Allotment of Canal Working Circle

Sr No	Name of strip forest	Compt No	Length in Kms	Area in ha	Total Length in Kms	Area in ha
1.	Jalandhar Branch Canal Canal	11 PL&R 12-17 20-23 L&R	20.740	14.50	20.740	14.50
Total			20.740	14.50	20.740	14.50

Table No. 38

**Compartment Allotment of Canal Working Circle
Dasuya Forest Division**

Sr No	Name of strip forest	Compt No	Length in Kms	Area in ha	Total Length in Kms	Area in ha
Canals						
1.	Hydle Channel	1-8 L&R	75.640	302.56	75.640	302.56
2.	Shah Nehar	1-6 L&R	50.020	17.28	50.020	17.28
3.	Budhabarh disty	L&R	10.370	8.30	10.370	8.30
4.	Singowa	1-4 L&R	31.720	17.02	31.720	7.02
5.	Shankar Nala	1-2 L&R	14.820	5.08	14.820	5.08
6.	Badhan	1-2 L&R	15.860	4.31	18.910	5.66
7.	Nangal	1-2 L&R	15.860	4.31	15.860	4.31
8.	Nala Singh	L&R	12.200	5.49	12.200	5.49
9.	Bhangala	L&R	13.270	5.30	13.270	5.30
10.	Pota Minor	1-2 L&R	13.240	5.90	13.240	5.90
11.	Mukerian	1-2 L&R	14.460	4.34	14.460	4.34
12.	Kharak	L&R	3.050	1.21	0.050	1.21
	Balra					
13.	Bishanpur	1-2 L&R	16.470	9.88	16.470	9.88
14.	Dogra	1-2 L&R	13.420	9.40	13.420	9.40
15.	Aima Minor	1-2 L&R	7.320	3.85	7.320	3.85
Total			310.770	405.64	310.770	405.64

**Table No. 39
Garhshankar Forest Division
Abstract of total growing stock of canal working circle
Classwise and Vol.(M3)**

Species	No.& Vol.	V	IV	III	IIA	IIB	IA	IB	Total
Shisham	No	70	274	314	281	268	156	120	1483
	Vol.	3.50	41.10	172.70	309.10	536.00	436.80	420.00	1919.2
Kikar	No.	68	329	214	122	69	38	28	868
	Vol.	3.40	49.35	117.70	134.20	138.00	106.40	98.00	647.05
Euc	No.	140	602	697	891	730	757	841	4658
	Vol	7.00	90.30	383.35	980.10	1460.00	2119.60	2943.50	7983.85
Misc	No.	2712	3942	2520	2180	1068	616	597	13635
	Vol.	135.60	591.30	1386.00	2398.00	2136.00	1724.80	2089.50	10461.20
Total	No.	2990	5147	3745	3474	2135	1567	1586	20644
	Vol.	149.5	772.05	2059.75	3821.4	4270	4387.6	5551	21011.3

Table No. 40

Hoshiarpur Forest Division
Abstract of total growing stock of canal working circle
Classwise No. & Vol. M³

Species	No & Vol.	V	VI	III	II-A	II-B	I-A	I-B	TOTAL
Euc	No	840	548	321	84	13	8	1	1815
	Vol	42	82.2	176.55	92.4	26	22.4	3.5	445.05
Khair	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Shisham	No	267	209	62	30	23	22	37	650
	Vol	13.35	31.35	34.1	33	46	61.6	129.5	348.9
Kikar	No	138	57	30	14	6	2	0	247
	Vol	6.9	8.55	16.5	15.4	12	5.6	0	64.95
Misc	No	3550	1709	519	187	60	23	13	6061
	Vol	177.5	256.35	285.45	205.7	120	64.4	45.5	1154.9
Chil	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Fruit	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Total	No	4795	2523	932	315	102	55	51	8773
	Vol	239.75	378.45	512.6	346.5	204	154	178.5	2013.8

Table No. 41

Dasuya Forest Division
Abstract of total growing stock of canal working circle
Classwise No. & Vol. M³

Species	No & Vol.	V	IV	III	IIA	IIB	IA	I B	Total
	Shisham	No	1801	1575	1581	122	85	27	9
Vol.		90.05	236.25	869.55	134.20	170.00	75.60	31.50	1607.15
Kikar	No	1903	1805	1702	584	89	29	12	6124
	Vol.	95.15	270.75	936.10	642.40	178.00	81.20	42.00	2245.60
Euc	No	13	46	56	19	3	2	1	140
	Vol.	0.65	6.90	30.80	20.90	6.00	5.60	3.50	74.35
Misc	No	11118	13883	17525	2728	776	229	402	46661
	Vol.	555.90	2082.45	9638.75	3000.80	1552.00	641.20	1407.00	18878.10
Total	No	14835	17309	20864	3453	953	287	424	58125
	Vol.	741.75	2596.35	11475.20	3798.30	1906.00	803.60	1484.00	22805.20

Table No. 42

**Felling programme for canal working circle
Garhshankar Forest Division**

Sr No	Name of Range	Name of Forest	Compt No.	Year of felling
1	Garhshankar	Jalandhar-Branch Canal	4L	2012-13
2	Garhshankar	Denowal Disty	R	2012-13
3	Balachaur	B.C Canal	6L	2013-14
4	Garhshankar	Jalandhar-Branch Canal	5L	2013-14
5	Kathgarh	B.D Canal	1L	2013-14
6	Kathgarh	B.D Canal	3R	2014-15
7	Garhshankar	Denowal Disty	L	2014-15
8	Kathgarh	B.D Canal	3L	2015-16
9	Garhshankar	Jalandhar-Branch Canal	4R	2015-16
10	Kathgarh	B.D Canal	2R	2015-16
11	Kathgarh	B.D Canal	1R	2016-17
12	Balachaur	B.D Canal	5L	2016-17
13	Garhshankar	Jalandhar-Branch Canal	6L	2017-18
14	Garhshankar	Jalandhar-Branch Canal	5R	2017-18
15	Balachaur	B.D Canal	6R	2017-18
16	Garhshankar	Jalandhar-Branch Canal	3P1	2018-19
17	Balachaur	B.D Canal	7P1	2018-19
18	Balachaur	B.D Canal	5R	2018-19
19	Kathgarh	B.D Canal	4Pr	2019-20
20	Mahilpur	Jalandhar-Branch Canal	9L	2019-20
21	Balachaur	B.D Canal	4P1	2020-21
22	Garhshankar	Jalandhar-Branch Canal	3Pr	2020-21
23	Kathgarh	B.D Canal	4P1	2020-21
24	Mahilpur	Jalandhar-Branch Canal	10L	2021-22
25	Mahilpur	Jalandhar-Branch Canal	8L	2021-22
26	Mahilpur	Jalandhar-Branch Canal	10R	2022-23
27	Garhshankar	Jalandhar-Branch Canal	7P1	2022-23
28	Kathgarh	B.D Canal	2L	2022-23
29	Garhshankar	Jalandhar-Branch Canal	6R	2023-24
30	Balachaur	B.D Canal	7Pr	2023-24
31	Mahilpur	Jalandhar-Branch Canal	7P1	2023-24
32	Balachaur	B.D Canal	4P1	2024-25
33	Mahilpur	Jalandhar-Branch Canal	11P1	2024-25
34	Mahilpur	Jalandhar-Branch Canal	7Pr	2024-25
35	Mahilpur	Jalandhar-Branch Canal	9R	2025-26
36	Mahilpur	Jalandhar-Branch Canal	8R	2025-26
37	Garhshankar	Jalandhar-Branch Canal	7Pr	2025-26
38	Mahilpur	Jalandhar-Branch Canal	11Pr	2026-27
39	Garhshankar	Mohanwal Disty	R	2026-27
40	Garhshankar	Mohanwal Disty	L	2026-27

Table No. 43
Felling programme for canal working circle
Hoshiarpur Forest Division

Sr No	Name of Range	Name of Forest	Compt No.	Year of felling
1	Hoshiarpur	Jalandhar Branch Canal	21R	2018-19
2	-do-	-do-	23R	2019-20
3	-do-	-do-	17L	2020-21
4	-do-	q-do-	13L	2021-22
5	-do-	-do-	14L	2022-23
6	-do-	-do-	15R	2023-24
7	-do-	-do-	16R	2024-25
8	-do-	-do-	18R	2025-26
9	-do-	-do-	19R	2026-27

Table No. 44
Felling programme for canal working circle
Dasuya Forest Division

S.No	Range	Name of Strip	Compt. No.	Year of felling
1	2	3	4	5
1	Mukerian	Bishanpur Disty	2R	2012-2013
2	--do--	Aima Minor	R	--do--
3	--do--	Dogran Minor	1L	--do--
4	--do--	Shah Nehar	2L	2013-2014
5	--do--	Dogra Minor	2R	--do--
6	--do--	Dogra Minor	2L	--do--
7	--do--	Aima Minor	L	2014-2015
8	--do--	Dogra Disty	1R	--do--
9	--do--	Bishanpur Disty	1R	--do--
10	--do--	Kharak Bhara Disty	L	2015-2016
11	--do--	Shankarwal Disty	2R	--do--
12	--do--	Shankarwal Disty	2L	--do--
13	--do--	Bishanpur Disty	1L	2016-2017
14	--do--	Shah Nehar	1L	--do--
15	--do--	Badhan Disty	2R	--do--
16	--do--	Bishanpur Disty	2L	2017-2018
17	--do--	Nangal Disty	1L	--do--
18	--do--	Shah Nehar	1R	--do--
19	--do--	Bhangala Minor	R	2018-2019
20	--do--	Nangal Disty	2L	--do--
21	Mukerian	Bhangala Minor	R	2018-2019
22	--do--	Nala Singh Disty	R	2019-2020
23	--do--	Shah Nehar	3L	--do--

S.No	Range	Name of Strip	Compt. No.	Year of felling
1	2	3	4	5
24	--do--	Shah Nehar	2R	--do--

25	--do--	Nangal Disty	1R	2020-2021
26	--do--	Nala Singh Disty	L	--do--
27	--do--	Singowal Disty	2R	--do--
28	--do--	Shah Nehar	4L	2021-2022
29	--do--	Nangal Disty	2R	--do--
30	--do--	Singowal Disty	4L	--do--
31	--do--	Singowal Disty	1R	2022-2023
32	--do--	Singowal Disty	2L	--do--
33	--do--	Singowal Disty	1L	--do--
34	--do--	Shah Nehar	5R	2023-2024
35	--do--	Shah Nehar	3R	--do--
36	Mukerian	Singowal Disty	3L	--do--
37	--do--	Singowal Disty	4R	2024-2025
38	--do--	Bhadan Disty	1L	--do--
39	--do--	Bhadan Disty	1R	--do--
40	--do--	Singowal Disty	3R	2025-2026
41	--do--	Shah Nehar	6R	--do--
42	--do--	Shah Nehar	4R	--do--
43	--do--	Shah Nehar	5L	2026-2027
44	--do--	Bhadan Disty	2L	--do--
45	--do--	Khark Bhara Disty	R	--do--

Table No. 45

**List of Blank Strip Forest Area
Canal Working Circle Garhshankar Forest Division**

Sr No	Name of strip forest	Compt No	Length in Kms	Area in ha	<u>Total</u> Length in Kms	Area in ha
Canals						
1.	Jalandhar	3PL&R 4-10 L&R, 11PL&R	73.200	109.93	73.200	109.93
2.	Mehendipur disty	L&R	0.914	0.32	0.914	0.32
3.	Denowal disty	L&R	10.674	3.74	10.674	3.74
4.	Mohanwal disty	L&R	1.220	0.43	1.220	0.43

Table No. 46

**List of Blank Strip Forest Area
Canal Working Circle
Hoshiarpur Forest Division**

Sr No	Name of strip forest	Compt No	Length in Kms	Area in ha	Total Length in Kms	Area in ha
Canals						
1.	Jalandhar Branch Canal	11PL&R, 12-17 20-23 L&R	20.740	8a	20.740	8 ha

Table No. 47

**List of Blank Strip Forest Area
Canal Working Circle
Dasuya Forest Division**

Sr No	Name of strip forest	Regulated Compt No	Length in Kms	Area in ha	Total Length in Kms	Area in ha
1.	Shah Nehar	1-6 L&R	50.020	17.28	50.020	17.28
2.	Budhabarh Disty	L&R	10.370	8.30	10.37	8.30
3.	Singowal	1-4L&R	31.720	17.02	31.720	17.02
4.	Shankar Nala	1-2 L&R	14.820	5.08	14.820	5.08
5.	Badhan	1-2 L&R	15.860	4.31	18.910	5.66
6.	Nangal	1-2 L&R	15.860	4.31	15.860	4.31
7.	Nala Singh	L&R	12.200	5.49	12.200	5.49
8.	Bhangala	L&R	13.270	5.30	13.270	5.30
9.	Pota Minor	1-2 L&R	13.240	5.90	13.240	5.90
10.	Mukerian	1-2 L&R	14.460	4.34	14.460	4.34
11.	Kharak Balra	L&R	3.050	1.21	3.050	1.21
12.	Bishanpur	1-2 L&R	16.470	9.88	16.470	9.88
13.	Dogra	1-2 L&R	13.420	9.40	13.420	9.40
14.	Aima Minor	1-2 L&R	7.320	3.85	7.320	3.85

Chapter XI

WORKING PLAN FOR DRAINS AND BANDHS WORKING CIRCLE

79. General Constitution:

This will comprise of all forest land along drains, bundhs and escapes falling within the jurisdiction of this Working Plan area. This Working Circle covers an area of 176.38 Ha. No specific silviculture system is followed as the nature for existing crop is uneven and mixed consisting of all ages. Special care will be taken to protect the natural regeneration wherever it occurs. Natural regeneration shall be supplemented by artificial planting where there are sizeable gaps.

79A Special objects of Management

The special objects of management of this working circle are: -

- a) To enhance the ecosystem services and to provide local livelihood opportunities to the local communities and conservation and restoration of biodiversity.
- b) To produce wood for agricultural implements, house construction and other uses for the rural as well as the urban population.
- c) To provide sufficient food and shelter to wild life especially, birds.
- d) To reclaim Alkaline/Saline with the suitable species.
- e) To manage the forests in such a way so as to get optimum sustainable yields.

80. Series,Block & Compartments:

i) **Series:-** In this working circle series have not been constituted because most of the areas are away from the habitations and local conditions very much conducive for raising plantations on these strips. In this working circle, Water for irrigation or hand watering of plants can be obtained from the tube wells in the neighbouring farms. Most of the area of bundhs and drains are unfertile due to the fact that these areas are predominantly sandy. The areas have been distributed in regulated working circle only.

ii) **Blocks & Compartments:-** There are no blocks in this working circle. As already explained in para 35 of Chapter VII 15 RD's length on either side has been constituted into one compartment. Left & Right sides have been denoted by the letters L&R respectively. Details of compartments allocated to this working circle has been given in **Table No. 48,49&50.**

Table No. 48
Compartment allotment of Drains & Bundh Working Circle
Garhshankar Forest Division

No of Strip Forest				Total	
	Compt No.	Length in Km in both Sides	Area in ha	Length in Km in both Sides	Area in ha
Mehmood Pur Drain	1-2 L&R	15.250	10.20	15.250	10.20
Total		15.250	10.20	15.250	10.20
Sutluj Bundh (Lower)	1-4 L&R, SPL&R	39.650	23.79	39.650	23.79
Sutlej Link Bundhs (Upper)	L&R	6.100	3.66	6.100	3.66
Chaha Choe Bandh	L&R	6.100	1.83	6.100	1.83
Kathgarh Choe Bandh	L&R	6.100	1.83	6.100	1.83
Balachaur Choe Bandh	L&R	6.100	7.32	6.100	7.32
Rakran Choe Bandh	L&R	6.100	3.66	6.100	3.66
Lohat Choe Bandh	L&R	6.100	3.66	6.100	3.66
Sudha Majra Choe Bandh	L&R	9.150	7.32	6.100	7.32
Total		85.400	53.07	85.400	53.07
Grand Total (Escapes & Bandhs)		100.650	53.07	100.650	63.27

Table No. 49
Compartment allotment of Drains & Bundh Working Circle
Hoshiarpur Forest Division

No of Strip Forest				Total	
	Compt No.	Length in Km in both Sides	Area in ha	Length in Km in both Sides	Area in ha
Bundhs					
Langerpur Bandh	6PL&R 7SL&R	22.570	10.14	22.570	10.14
Shepur Bandh R/side	7PLR 8-11 L&R 9PL&R	40.870	12.90	40.870	12.90
Sherpur Bandh L/side	10-11 L&R	6.04	3.00	13.420	6.04
		76.860	29.08	76.860	29.08

Table No. 50
Compartment allotment of Drains & Bundh Working Circle
Dasuya Forest Division

Sr No	Name of strip/forest		Compt. No	Length in kms	Area in Hect	Length in Kms	Area in Hect
1	Escape Bein Channel Total	1-5 L&R	45.750 45.750	10.51 10.51	45.750 45.750	10.51 10.51	
2	Bundhs Beas Dhusi Bundh	1-5 L&R, 6PL&R	48.800	48.04	48.800	48.04	
3	Beas Dussi Link bundh	L&R	6.100	1.83	6.100	1.83	
4	Langerpur Bundh I	1-5 L&R, 6PL&R	46.970	21.09	46.970	21.09	
5	Langerpur Bundh II	L&R	7.320	2.56	7.320	2.56	
	Total		109.190	73.52	109.190	73.52	
	G. Total (Escapes & Bundhs)		154.940	84.03	154.940	84.03	

81. Character of Vegetation:

In general the crop is irregular consisting of young to middle aged kikar, eucalyptus & shisham with scattered trees of miscellaneous species. Denisty of the crop varies to a great extent i.e. from full density to only scattered trees. Composition of the crop also varies from pure to a complete mixture. Eucalyptus occurs more on Bandhs while in drains, kikar is more. Shisham is present only in few stretches.

82. Analysis & Evaluation of Crop:

Entire growing stock was enumerated down to 60 cms girth at breast height in the year 2007-2008 in Garhshankar, 2009-10 in Hoshiarpur & Dasuya Forest Divisions. The growing stock entered in the enumeration registers of the divisions. The details of growing stock present in this Working Circle has been given in **Table No 51,52&53**.

83. Method of treatment:

Due to the irregular nature of crop with regard to density and composition, treatment will be given according to the requirements of the species and the site factor. The whole compartment will be treated as a unit. After marking according to the rules, felling will be done. The root suckers or advance growth will be cleaned, singled, spaced & pruned if required.

The new plantations will be fenced preferably with barbed wire or thorny brushwood. Thereafter the blanks will be planted with selected species for which advance work shall be carried out well in time. The set of treatments required and species to be planted will be decided by the DFO after inspecting the site in advance and the field staff will be briefed, accordingly. In small blanks tall planting shall be done to avoid suppression in early stages. Efforts shall be made to increase the shisham growing stock by planting more at suitable sites & preserving the older trees. List of blank areas has been given in the **tables 57, 58 & 59**. Efforts shall be made to plant up the blank areas at the earliest. Regeneration will commensurate with felling and felling will be done only after ensuring budgetary provision for regeneration.

Table No. 51

Abstract of Total Growing Stock of Drains & Bundhs Working Circle

Garhshankar Forest Division

Classwise No Vol. M³

Species	No &	V	IV	III	II-A	II-B	I-A	I-B	TOTAL
	Vol.								
Shisham	No &	18	89	85	66	50	33	16	357
	Vol.	0.90	13.35	46.75	72.60	100.00	92.40	56.00	382.00
Kikar	No &	0	14	67	88	28	13	3	213
	Vol.	0.00	2.10	36.85	96.80	56.00	36.40	10.50	238.65
Euc	No &	393	142	809	634	279	183	93	2533
	Vol.	19.65	21.30	444.95	697.40	558.00	512.40	325.50	2579.20
Khair	No &	106	118	34	5	0	0	0	263
	Vol.	5.30	17.70	18.70	5.50	0.00	0.00	0.00	47.20
Misc	No &	79	357	303	234	34	0	0	1007
	Vol.	3.95	53.55	166.65	257.40	68.00	0.00	0.00	549.55
Total	No &	596	720	1298	1027	391	229	112	4373
	Vol.	29.80	108.00	713.90	1129.70	782.00	641.20	392.00	3796.60

Table No. 52
Abstract of Total Growing Stock of Drains & Bundhs Working Circle
Hoshiarpur Forest Division
Classwise No Vol. (M³)

Species	No & Vol.	V	VI	III	II-A	II-B	I-A	I-B	TOTAL
Euc	No	84	3117	2293	1025	265	58	12	6854
	Vol	4.2	467.55	1261.15	1127.5	530	162.4	42	3594.8
Khair	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Shisham	No	21	70	46	25	6	1	1	170
	Vol	1.05	10.5	25.3	27.5	12	2.8	3.5	82.65
Kikar	No	40	229	145	50	13	3	1	481
	Vol	2	34.35	79.75	55	26	8.4	3.5	209
Misc	No	169	359	87	27	1	0	0	643
	Vol	8.45	53.85	47.85	29.7	2	0	0	141.85
Chil	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Fruit	No	0	0	0	0	0	0	0	0
	Vol	0	0	0	0	0	0	0	0
Total	No	314	3775	2571	1127	285	62	14	8148
	Vol	15.7	566.25	1414.05	1239.7	570	173.6	49	4028.3

Table No. 53
Abstract of Total Growing Stock of Drains & Bundhs Working Circle
Dasuya Forest Division
Classwise No Vol. (M³)

Species	No & Vol.	V	IV	III	IIA	IIB	IA	I B	Total
	Shisham	No	1502	1451	1029	85	27	14	11
Vol.		75.10	217.65	565.95	93.50	54.00	39.20	38.50	1083.90
Kikar	No	977	612	205	155	3	4	2	1958
	Vol.	48.85	91.80	112.75	170.50	6.00	11.20	7.00	448.10
Euc	No	5081	4586	3098	1065	127	96	34	14087
	Vol.	254.05	687.90	1703.90	1171.50	254.00	268.80	119.00	4459.15
Misc	No	1213	798	284	195	4	3	6	2503
	Vol.	60.65	119.70	156.20	214.50	8.00	8.40	21.00	588.45
Total	No	8773	7447	4616	1500	161	117	53	22667
	Vol.	438.65	1117.05	2538.80	1650.00	322.00	327.60	185.50	6579.60

84. **Silvicultural System:**

As the crop in almost all the forests consists of different age classes gradation and species, silvicultural system to be followed is “Selection cum improvement felling”. In no circumstances clear felling will be allowed in any forest. The marking shall be done in manner that the canopy remains closed so as to preserve soil and water conservation in the area.

85. Rotation:

The rotation for various species has been fixed to produce quality timber which is in great demand in the market. Due to short supply of Shisham and exorbitant market rates of other timbers such as teak, deodar etc, the demand for comparatively cheaper alternative timber has increased. Lately, Eucalyptus & Kikar wood have been used as timber for construction and furniture making. Therefore the rotation of these species has been increased to produce large size timber. Exploitable girth and rotation fixed for various species is as follows:-

Sr No	Name of Species	Rotation in years	Exploitable girth at breast height (o.b) in cms
1	Shisham	60	180
2	Kikar	25	105
3	Eucalyptus	25	130
4	Misc	60	180

86. Calculation of yield:

There is great consciousness of environmental conservation all around. Government of India has issued guidelines for preparation of working plans, wherein it has been suggested to reduce the yield to 50%. Already, felling of green Shisham, Bohar, Pipal and Fruit trees has been banned and all out efforts are being made to improve the environment and contain pollution effects. Accordingly a very conservative approach to felling of trees is indicated. Due to the method of treatment prescribed yield shall be regulated by volume.

Calculation of yield:

Annual yield of various spp. according to Simmon's modification of Von Mental's formula has been prescribed as below:-

$$Y = V(2r/r^2 - x^2)$$

Where:

- V= Total volume of growing stock in cubic meters.
 r= Rotation in years.
 x= Age in years
 Y= Annual yield in cubic meters.

By application of this formula the annual yield of various species will be as follows:-

Garhshankar Forest Division

	Shisham	Kikar	Euc.	Khair	Misc.	Total
V= Volume of growing stock	382.00	238.65	2579.2	47.20	549.55	3796.60
Stock in regulated Series						
r= Rotation in years.	60	25	25	30	60	-
X= Age in years	20	10	10	20	10	-
Corresponding to which enumeration has been done.						
Y= Annual yield in Cubic meters.	14.325	22.729	245.638	5.664	20.608	308.964
Annual yield Prescribed	7.163	11.364	22.819	2.832	10.304	154.482
	(Dead & Dry)					

Hoshiarpur Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
V= Volume of growing stock	82.65	209.00	3594.80	141.85	4028.3
R= Rotation in years.	60	25	25	60	-
X= Age in years .Corresponding to which enumeration has been done.	20	10	10	20	-
Y= Annual yield in Cubic meters.	3.09	19.90	342.36	5.32	370.67
Annual yield Prescribed	1.54	9.95	171.18	2.66	185.33
	(Dead & Dry)				

Dasuya Forest Division

	Shisham	Kikar	Euc.	Misc.	Total
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V= Volume of growing stock	1083.90	448.10	4559.15	588.45	6679.60
R= Rotation in years.	60	25	25	60	-
X= Age in years .Corresponding to which enumeration has been done.	20	10	10	20	-
Y= Annual yield in Cubic meters.	40.646	42.676	424.681	22.067	530.07
Annual yield Prescribed	20.323 (Dead & Dry)	21.338	212.3405	11.0335	265.035

According to the guidelines issued by the Govt of India, the yield is to be kept at $\frac{1}{2}$ calculated yield. But due to ban on felling of green shisham trees and some misc. tree species and increase of rotation of eucalyptus and kikar from 10 years. 20 years, to 25 years, lot of green felling have been saved. For the working circle as a whole, the prescribed yield has been kept at $\frac{1}{2}$ of the calculated yield keeping in view the difficulties in raising plantations on the drains and bundhs because of refractory and adverse site conditions and enormous biotic pressures resulting in poor growth and increment. The encroachments if any should be removed and areas be planted up. Prescribed yields include the volume of dead and dry trees.

Yield obtained through felling of dead, dry and fallen trees and through developmental fellings as consequence of diversion cases under Forest Conservation Act, 1980 etc. will be deducted from the prescribed annual yield of that particular species and only the balance will be obtained by marking green trees. If the volume harvested on account of dead, dry and fallen trees and other development related fellings exceeds the annual yield prescribed, then the excess volume so felled shall be accounted for against the prescribed annual yield for that species in the following year. As a measure of conservation the annual yield is not prescribed for green Shisham. The volume obtained on account of felling dead, dry and fallen shisham trees shall be adjusted against the prescribed yield of Eucalyptus, Kikar and misc species in that order for that year and if the volume is still in excess, then the excess volume of that year will be adjusted in the next year in the same afore mentioned order. The marking for felling will be done according to priority list given under the felling programme. The dead, dry and fallen trees of any species will not be allowed to stand on strips even if the total prescribed yield for a particular species is already realized and these dead, dry and fallen trees will be harvested on priority basis to avert loss of revenue as a result of degradation of timber quality. Such volume realized of dead, dry and fallen trees in excess of annual prescribed yield in case of Eucalyptus, Kikar and misc species will be deducted from the prescribed yield of that particular species in that particular year and if the yield is still in excess then the same will be adjusted in the following year as mentioned above. Keeping in mind the above para the annual coupe will be worked out.

87. Marking Rules:

The following marking rules may be prescribed:-

- 1) All trees in the annual coupe will be marked for felling except the following :-
 - a) Green standing shisham of all age classes.
 - b) Green Rajain, Bahera, Neem and Sohanjana, Arjan.
 - c) All healthy fruit and ornamental trees including pipal and bohar.
 - d) Advance growth of all spp. up to 60 cms girth.
 - e) Trees required for defence purposes and
 - f) Trees falling in the avenue line of service roads.
- 2) All dead, dry, diseased and fallen trees will be marked for felling.
- 3) Trees causing obstruction to movement on bundhs and service roads of drains will be marked.
- 4) Trees that have come up in to bed of the drains causing obstruction to the flow of water during monsoon season shall be marked as measure of prevention of flood.

88. Method of Execution felling:

- i) Felling should be done with care so as to avoid damage to berms of bundhs.
- ii) Eucalyptus felling shall not be done in very hot season.
- iii) Green eucalyptus shall be cut standing with saw and stump height shall be limited to 10-15cms
- iv) Pits dug for uprooting any diseased stumps, shall be refilled.
- v) No uprooting of stumps shall be allowed on bundhs
- vi) While felling, care should be taken to avoid trees falling into drains and escapes.

89. Planting Rules:

No kana stubbing and clearing of bushes is allowed on bundhs except near pits. Advance earth work shall be carried out and fencing will be done in plantation areas. While planting, the following rules shall be observed.

- i) Inter-departmental rules shall be adhered to strictly.
- ii) Species having coppicing potential such as Subabul, Khair, Eucalyptus, Prosopis, Shisham etc. should be necessarily planted.
- iii) Near bridges and habitations, shade bearing ornamental tree species shall be planted.

Atleast 1-2 trees of Pipal and Bohar will also be planted ,in each RD.

- iv) Selection of species will be made according to the requirements of locality factors such as soil conditions, biotic pressures etc.
- v) Planting should not be done in the bed of the drains.
- vi) Renegeration will commensurate with felling.

90. Felling Programme:

Felling programme has been prepared in the shape of a priority list given in the **tables No.54, 55 & 56**. The year of felling is to be strictly followed deeping in view over all yield prescribed and adjustments suggested thereon to avoid green felling to the extent possible.

91. Planting Programme:

The areas felled will be planted in the following year. Utmost importance will be given for planting the existing gaps. Encroachments, if any, be removed on priority basis and the areas vacated be planted immediately. The plantations will be fully protected by barbed wire fence. The choice of the species should be made according to the site and the other relevant factors. The list of blank areas has also been given in **table no 57, 58 & 59** and these areas should be planted at the earliest to avoid any encroachment and disputes.

Table No. 54

**Felling programme for Drains & Bundh working circle
Garhshankar Forest Division**

Sr No	Name of Range	Name of Forest	Compt No.	Year of felling
1	Balachaur	Sutluj Bandh Lower	4L	2012-13
2	Kathgarh	Rakran Choe Bandh	L	2013-14
3	Balachaur	Sudha Majra Choe Bandh	R	2014-15
4	Kathgarh	Lohat Choe Bandh	R	2015-2016
5	Balachaur	Rakran Choe Bandh	R	2016-17
6	Kathgarh	Sudha Majra Choe Bandh	L	2016-17
7	Balachaur	Sutluj Bandh Lower	4R	2017-18
8	Kathgarh	Lohat Choe Bandh	L	2018-19
9	Balachaur	Sutluj Bandh Lower	3R	2018-19
10	Kathgarh	Sutluj Bandh Lower	2L	2019-20
11	Balachaur	Sutluj Bandh Lower	L	2020-21
12	Balachaur	Sutluj Bandh Lower	2R	2020-21
13	Balachaur	Sutluj Bandh Upper	R	2022-23
14	Kathgarh	Sutluj Bandh Upper	L	2023-24
15	Balachaur	Sutluj Bandh Upper	3L	2024-25

16	Balachaur	Sutluj Bandh Lower	1R	2024-25
17	Balachaur	Sutluj Bandh Lower	5Pr	2025-26
18	Balachaur	Sutluj Bandh Lower	5P1	2025-26
19	Balachaur	Balachaur Choe Bandh	L	2026-27
20	Balachaur	Balachaur Choe Bandh	L	2026-27

Table No. 55

**Felling programme for Drains & Bundh working circle
Hoshiarpur Forest Division**

Sr No	Name of Range	Name of Strip	Compt No.	Year of felling
1	2	3	4	5
1	Hariana	Sherpur Bandh	6R	2012-13
2	-do-	-do-	7R	2013-14
3	-do-	-do-	8L	2014-15
4	-do-	-do-	9L	2015-16
5	-do-	-do-	10L	2016-17
6	-do-	-do-	11R	2017-18
7	Dholbaha	Langerpur Bandh	6R	2018-19
8	-do-	-do-	6L	2019-20
9	-do-	-do-	7R	2020-21
10	-do-	-do-	7L	2021-22
11	-do-	-do-	6L	2022-23
12	Hoshiarpur	Nasrala Bandh		2025-26

Table No. 56

**Felling programme for Drains & Bundh working circle
Dasuya Forest Division**

Sr No	Name of Range	Name of Strip	Compt No.	Year of felling
1	Dasuya	Beas-Dhussi Bundh	1L	2012-2013
2	Dasuya	Beas-Dhussi Bundh	2L	-do-
3	Dasuya	Beas-Dhussi Bundh	3L	2013-2014
4	Dasuya	Beas-Dhussi Bundh	3R	-do-
5	Dasuya	Beas-Dhussi Bundh	2R	2014-2015
6	Dasuya	Beas-Dhussi Bundh	4L	-do-
7	Dasuya	Beas-Dhussi Bundh	1R	2015-2016
8	Dasuya	Beas-Dhussi Bundh	5L	-do-
9	Dasuya	Beas-Dhussi Bundh	1R	2016-2017
10	Dasuya	Beas-Dhussi Bundh	4R	2017-2018
11	Dasuya	Langerpur Bundh	2R	-do-
12	Dasuya	Langerpur Bundh	1L	2018-2019
13	Dasuya	Beas-Dhussi Bundh	6R	-do-
14	Badla	Langerpur Bundh	3R	2019-2020
15	Dasuya	Beas-Dhussi Bundh	5R	-do-
16	Badla	Langerpur Bundh	3L	2020-2021
17	Dasuya	Beas-Dhussi Bundh	6L	2021-2022
18	Dasuya	Bein Channel	2L	-do-
19	Dasuya	Langerpur Bundh	2L	2022-2023
20	Dasuya	Bein Channel	3R	-do-

21	Dasuya	Bein Channel	4L	2023-2024
22	Dasuya	Bein Channel	3L	2024-2025
23	Dasuya	Bein Channel	5R	-do-
24	Dasuya	Bein Channel	4R	2025-2026
25	Dasuya	Bein Channel	5L	2026-2027

Table No. 57

**List of Blank strip Forest Area
Drains & Bundhs working circle
Garhshankar Forest Division**

No of Strip Forest				Total	
	Compt No.	Length in Km in both Sides	Area in ha	Length in Km in both Sides	Area in ha
Bundhs					
Sutlej Link Bandh (Upper)	L&R	6.100	3.66	6.100	3.66
Chahal Choe Bandh	L&R	6.100	1.83	6.100	1.83
Kathgarh Choe Bandh	L&R	6.100	1.83	6.100	1.83
Balachaur Choe Bandh	L&R	6.100	7.32	6.100	7.32
Rakran Choe Bandh	L&R	6.100	3.66	6.100	3.66
Lohat Choe	L&R	6.100	3.66	6.100	3.66
Sudha Majra Choe Bandh	L&R	9.150	7.32	6.100	7.32
Total		45.75	29.28	45.75	29.28

Table No. 58

**List of Blank strip Forest Area
Drains & Bundhs working circle
Hoshiarpur Forest Divisions**

No of Strip Forest				Total	
	Compt No.	Length in Km in both Sides	Area in ha	Length in Km in both Sides	Area in ha
Bundhs					
Langerpur Bandh	6PL&R 7SL&R	22.570	6.00	22.570	6.00
Sherpur Bandh R/side	7PL&R 8-11 L&R 9PL&R	40.870	8.00	40.870	8.00
Sherpur Bandh L/side	10-11 L&R	13.420	3.00	13.420	3.00
Total		76.86	17.00	76.86	17.00

Table No. 59

**List of Blank strip Forest Area
Drains & Bundhs working circle
Dasuya Forest Divisions**

Sr No	Name of Strip/ Forest	Compt No.	Length in Km	Area in ha	Total Length in Km	Total Area in ha
1	Escapes Bein Channel	1-5 L&R	45.750	10.51	45.750	10.51
	Bundhs					
2	Beas Dussi Link bundh	L&R	6.100	1.83	6.100	1.83
3	Langerpur Bundh I	1-5 L&R,6PL&R	46.970	21.09	46.970	21.09
4	Langerpur Bundh II	L&R	7.320	2.56	7.320	2.56
	Total	-	106.14	35.99	106.14	35.99

Chapter XII

WORKING PLAN FOR THE RAIL WORKING CIRCLE

92. General Constitution:

The strips along Rails within Garhshankar, Hoshiarpur and Dasuya Forest Divisions have been allocated to Rail Working Circle. It has an area of 320.86 ha and spread over 228.4 kms. length of the Rail system.

93. Blocks and Compartments:

Each strip on either side would constitute a block. Each block is further divided into compartments. A compartment in strip along rail will constitute 5 kms. or part thereof on either side.

Table No. 60

Garhshankar Forest Division

Compartments allotment of Rail Working Circle

Sr No	Name of Strip Forest	Compt No.	Length in kms	Area in ha
1	Phagwara-Nawanshehar Jaijon Rly Line	9PL&R, 10L&R 11-13L&R, 14AL&R 10BL&R, (46-48 K.M)	44.00	48.10
			6.000	6.00
Total			50.000	54.10

Table No. 61

Hoshiarpur Forest Division

Compartments allotment of Rail Working Circle

Sr No	Name of Strip Forest	Compt No.	Length in kms	Area in ha
1	Jalandhar-Hsp Rly Line	6-7 L&R AL&R. 8BR(38-39)	26.400	40.70
			2.000	23.00
Total			28.400	63.70

Table No. 62

**Compartments allotment of Rail Working Circle
Dasuya Forest Division**

Sr No	Name of Strip Forest	Compt No.	Length in kms	Area in ha
1	Jalandhar-Pathankot Rly. Line	7PL&R, 8L&R, 9A L&R,10-14 L&R, 15A L&R,16-17 L&R, 18 PL&R, 9BL&R (41-43), 15BL&R (73-75).	98.800 8.00	128.56 21.70
2	Mukerian Talwara Rly Line	1-5L&R.	44.000	52.80
Total			150.00	203.06

Table No. 63**Garhshankar Forest Division****Abstract of total growing stock of Rail Working Circle****Classwise No. & Vol. M³****(No enumeration has been done)****Hence no detail of growing stock.****Table No. 64****Hoshiarpur Forest Division****Abstract of total growing stock of Rail Working Circle****Classwise No. & Vol. M³****(No enumeration has been done)****Hence no detail of growing stock.****Table No. 65****Dasuya Forest Division****Abstract of total growing stock of Rail Working Circle****Classwise No. & Vol. M³****(No enumeration has been done)****Hence no detail of growing stock.**

94. Character of Vegetation

The crop varies in composition, age and density. There are pure stands of shisham, eucalyptus, kikar and poplar in short stretches, however, mixtures of these species are also not un-common Shisham crop is predominantly mature with meager younger age classes. The rail working circle remained almost untreated during the previous working plan period barring Dasuya Forest division where the extent of afforestation was minimal. The crop is generally found to be mature.

95. Analysis of the crop & Evaluation:

Growing stock has not been enumerated. The growing stock figures are nil in this working circle as given in **Table No 63, 64 & 65**.

96. Method of Treatment:

The compartments will be treated not only according to the silviculture requirements of the crop but also in accordance with the overriding railway safety norms. Most of the areas of this working circle had not been treated adequately during the previous Working Plan period. This makes it necessary that large-scale afforestation efforts are required to be undertaken immediately so that all the blank areas are brought under vegetation cover. The coppice shoots will be adopted and tended. The root suckers of shisham will be tended and protected properly. Different strips will be inspected by the Senior Officers periodically to explain to the field staff the treatment to be carried out and monitor the progress from time to time in this Working Circle which has been neglected continuously resulting in very poor growing stock, the nature of earthwork to be done in advance and the species to be planted. Tending operations such as jungle clearance, kana stubbing, spacing, singling, pruning etc. for the advance growth shall be completed immediately after felling and will before earthwork for planting. For planting in small gaps or in coppiced area, only tall plants shall be planted to avoid suppression in early stages. Regeneration will commensurate with felling and felling will be done only after ensuring budgetary provision for regeneration.

97. Silvicultural System:

As the crop in almost all the forests consists of different age classes gradation and species, silvicultural system to be followed is "Selection cum improvement felling". In no circumstances clear felling will be allowed in any forest. The marking shall be done in manner that the canopy remains closed so as to preserve soil and water conservation in the area.

98. Rotation:

The rotation of the various species has been fixed for producing large sized timber for which there is great demand but acute shortage. The rotation of various species and their exploitable girth at breast height is given below: -

S. No.	Name of species	Rotation (in years)	Exploitable girth at breast height (in cms)
1	Shisham	60	180
2	Kikar	25	105
3	Eucalyptus	25	130
4	Misc.	60	180

99. Yield Regulation:

The yield is to be controlled by volume and the annual coup shall be worked out accordingly. In this Working Circle a very Conservative approach has been adopted towards felling of trees keeping in view inadequate growing stock. Von Mental's formula with Simmon's modification has been used to calculate the yield of each species separately as follows:-

$$Y = V(2r/r^2 - x^2)$$

Where

V	=	Growing stock.
r	=	Rotation of the species
x	=	Age in years corresponding to 60- cms G.b.h. upto which growing stock has been enumerated.
Y	=	Annual yield

By application of this formula the yield of various species has not been calculated as there is a no enumeration in these areas as under: -

Garhshankar Forest Division
(No new enumeration has been done)
Therefore no yield calculation has been done

Hoshiarpur Forest Division
(No new enumeration has been done)
Therefore no yield calculation has been done

Dasuya Forest Division
(No new enumeration has been done)
Therefore no yield calculation has been done

There is no agreement between Railway Department and Forest Department regarding management of strips along railway lines. Therefore till the finalization of any step in this direction no growing stock and yield calculation has been prescribed. But all these areas are notified Protected Forests and attracts the provisions of Forest Conservation Act-1980.

According to the guidelines issued by the Govt, of India for preparation of Working Plan, 50% of the calculated yield is to be prescribed annually. Overall yield of strips and blocks forests will be inter adjustable. Yields include the volume of dead and dry trees. But due to increase in the rotation of Eucalyptus and kikar, ban on felling of green shisham, fruit and ficus species, inadequate artificial regeneration, and non availability of yield for harvesting in case of kikar & Miscellaneous species no yield has been prescribed for these species. In Dasuya, Hoshiarpur and Garhshankar Forest Divisions no prescription has been made due to non availability and conflict with railway department. The yield obtained from the felling of any dead, dry, fallen trees and fellings on account of railway safety should be adjusted whenever there is some agreement with railway department.

100. Marking Rules:

The following marking rules are prescribed:-

- 1) All trees in the annual coupe will be marked for felling except the following :-
 - a) Green standing shisham of all age classes.
 - b) Green Rajain, Bahera, Neem and Sohanjana, Arjan trees.
 - c) All fruit and ornamental trees including pipal & bohar.
 - d) Advance growth of all species upto 60 cms girth.
 - e) Trees required for defenses purpose.
 - f) Trees falling in refractile and difficult sites to regenerate.
- 2) All dead, dry diseased and fallen trees will be marked for felling.
- 3) Trees inside the curves obstructing the view may be marked after Joint Inspection by Railway and Forest authorities in view of railway safety.
- 4) Trees on either side of the level crossings may be marked for felling for safety and signaling purpose after Joint Inspection by Railway and Forest authorities.
- 5) All the safety regulations of the railways will be strictly followed

101. Method of executing fellings

- i) Felling should be carried out in such a way that no damage is done to Rail tracks and transmission lines.
- ii) Under no circumstances the trees will be felled on railway line.
- iii) Green Eucalyptus felling will not be done during summer i.e. 15th April to 15th June.
- iv) Eucalyptus trees will be cut slanting and stump-height will be kept 10- 15 cms only and stumps will not be uprooted to ensure coppicing.
- v) Pits shall be filled in case of uprooting of stumps of diseased or uprooted trees.

102. Planting Rules:

- 1) Planting will be done strictly according to the inter-departmental rules.
- 2) Shade giving and ornamental trees of longer rotation shall be planted in station yards and platforms, if required.
- 3) As far as site factors permit, commercially important species will be grown behind the avenue line.
- 4) Only one species will be planted as far as possible in one compartment.
- 5) Regeneration will commensurate with felling.

103. Felling Programme:-

Felling programme for the working plan period is given in **Table no 66, 67**. In case of Garhshankar Forest Division no felling programme is given as no yield is prescribed keeping in view the poor growing stocks available and conservation of these trees. The year of felling is to be strictly followed giving priority to the felling of over mature and mature trees which over lived their rotation on various strips keeping in view the prescribed volume and adjustments suggested in yield regulation. All this is to be followed accordingly whenever there is some acceptable agreement with railway department.

104. Planting Programme:-

Areas felled in a particular year will be planted in the following year. There is urgent need to undertake extensive plantations in this Working Circle as the afforestation works during the period of previous working plan were almost negligible. Most of the strips are without any regeneration and vacant. The list of blank areas has been given in **table no 68, 69 & 70**. Efforts shall be made to plant up these blanks at the earliest to avoid encroachment and disputes in future.

Table No. 66**Felling programme for Rail Working Circle****Hoshiarpur Forest Division**

Sr No	Range	Name of Strip	Compt No.	Year of felling
1	2	3	4	5
1	Hoshiarpur	Jalandhar Hoshiarpur Railway	6L	No prescription
2	--do--	--do--	6L	--do--
3	--do--	--do--	6R	--do--
4	--do--	--do--	AL	--do--
5	--do--	--do--	R	--do--
6	--do--	--do--	7L	--do--
7	--do--	--do--	7R	--do--
8	--do--	--do--	AL	--do--
9	--do--	--do--	R	--do--
10	--do--	--do--	8BR	--do--

Table No. 67**Felling programme for Rail Working Circle****Dasuya Forest Division**

Sr No	Range	Name of Strip	Compt No.	Year of felling
1	Dasuya	Jalandhar-Pathankot Rly. Line	7PL&R	No prescription
2	Mukerian	--do--	8L&R	--do--
3	Dasuya	--do--	9 AL&R	--do--
4	Dasuya	--do--	10 L&R	--do--
5	Mukerian	--do--	11L&R	--do--
6	Dasuya	--do--	12L&R	--do--
7	Dasuya	--do--	13L&R	--do--
8	Dasuya	--do--	14L&R	--do--
9	Mukerian	--do--	15L&R	--do--
10	Dasuya	--do--	16L&R	--do--
11	Dasuya	--do--	17L&R	--do--
12	Mukerian	--do--	18PL&R	--do--
13	Dasuya	Mukerian Talwara R.L	1&2 L&R	--do--
14	Dasuya	--do--	3&4L&R	--do--
15	Dasuya	--do--	5L&R	--do--

Table No. 68
List of Blank Strip Forest Area in Rail Working circle
Garhshankar Forest Division

S. No	Name of strip Forest	Compt No	Length in kms	Blank Area (ha)
Rail				
1.	Phagwara-Nawanshehar Jaijon Rly Line	9PL&R, 10L&R 11-13 L&R 14 AL&R 10BL&R (46-48 K.m)	44.00 6.000	28 3
Total			50.000	31

Table No. 69
Hoshiarpur Forest Division
List of Blank Strip Forest Area in Rail Working circle

S. No	Name of strip Forest	Compt No	Length in kms	Blank Area (ha)
1.	Jalandhar-Hsp Rly Line	6-7 L&R AL&R 8BR (38-39)	26.400 2.000	25 12
Total			28.400	37

Table No. 70
Dasuya Forest Division
List of Blank Strip Forest Area in Rail Working circle

S. No	Name of strip Forest	Compt No	Length in kms	Blank Area (ha)
Rail				
1	Jalandha Pathankot Rly. Line	7PL&R, 8L&R,9AL&R 10-14 L&R,15AL&R, 16-17 L&R, 18 PL&R 9BL&R (41-43) 15 BL&R (73-75)	98.800 8.00	7.5 10
2	Mukerian Talwara Rly Line	1-5 L&R	44.000	28
Total			150.00	45.5

CHAPTER XIII

Wild life (Overlapping) working circle

105. General constitution:-

The block forests in the Shiwalik hills of the Hoshiarpur District comprising parts of Chohal, Saleran, Patiarian, Chack Sadhu, Nara, Dada, Manjhi, Baroti & Dehrian Protected Forests (P.F) of Hoshiarpur Forest Division & Chatterpur P.F of Dasuya Forest Division which are rich in wild life. Besides the above forest area, large areas of Private forests of Hoshiarpur District managed under section 4 & 5 of Land Preservation Act, 1900 and Bindraban R.F., Karanpur R.F & Ban-Nandbir P.F of Dasuya Forest Division managed under the separate working plan also provide a good habitat to the wild life. A separate Wild Life Division has been created with its HQ at Hoshiarpur. D.F.O Wild Life Hoshiarpur is managing the Wild Life of all the divisions covered under this Working Plan. This working Circle is Co-terminus with all the forest area for this Working Plan extending over all the Strip Forests and Block Forests. In the area of this Working Plan there is a Wild Life Sanctuary named as Takhni Rehmapur Wild Life Sanctuary which was constituted in 956 Acres vide Punjab Govt. Notification No 34/10/99-Ft.IV/ 7182 dt 8.6.99. The separate management plan dealing with Takhni-Rehmapur wild life sanctuary takes care of the wild life management in the sanctuary. Similarly community forest of Lalwan has been notified as Lalwan Community Reserve vide Punjab Govt notification No / 46/78/2007/Ft.V/6084/Dated/ 22/06/2007. Wild life is mostly found in the undulating areas near perennial streams and grass lands. The wild life of this area is effectively covered by the Wild Life (Protection) Act, 1972, which came in to force in Punjab State w.e.f. 1.4.1975, to protect and conserve wild life. In the case of wildlife in a Protected area like Sanctuaries or National Parks, the management will be as per the **Management Plan of the Protected Area**. The responsibility of implementing the prescriptions of the Management is vested on the DFO (Wildlife). As separate Wild Life Management Plans for each Sanctuary and other protected areas are being prepared and implemented by the Wild Life wing, **this Working Plan will not deal with the management of Wild Life in such protected areas.**

This working circle is created with the following objectives:-

106. Objectives of Management:-

To conserve and protect the existing biodiversity of the ecosystem as a whole.

To improve the wildlife habitat in terms of forage varieties, protective & breeding cover, water holes and salt licks.

To supplement the existing natural vegetation by planting fruit and fodder species with special emphasis on trees that shelter wildlife.

To ensure collection of scientific data for the maintenance and development of viable population of fauna for scientific, aesthetic, cultural, ecological and economic purposes.

107. Series, Blocks and compartments:-

There are no separate Series, Blocks and Compartments as this working circle is overlapping with all other working circles for this Working Plan.

108. Character of Vegetation:-

The forests mentioned in this working circle comprise dry deciduous and scrub vegetation with predominance of trees such as Khair, Shisham, Phalahi, Simal, Ber, Jamun, Pipal, Khajur etc. The hillocks are covered with Lantana and dense growth of Bhabbar, Sarala, Kana & Khabbal grasses. The forest area of Chatterpur and Dehrian have Chil (*Pinus roxburghii*) trees.

109. Analysis and Evaluation of Wildlife & its habitat:-

Wild life institute of India in its bio-geographical classification recognized north Shiwalik hill system from Ropar to Gurdaspur which includes Hoshiarpur District as one of the regions amongst three regions of Punjab of immense biological significance. In this Shiwalik region rare animals like Pangolin and pythons are included in the International Red Data list of I.U.C.N. Their habitat is found only in Garhshankar, Hoshiarpur and Dasuya Forest Divisions. Panthers are not native to this area but sometimes migrate for Himachal Pradesh to hilly areas of Hoshiarpur District. Apart from the above other animals such as Black buck, Blue Bull, Wild boar, Spotted deer, Barking deer, Sambhar, Hog deer, Jackal, Rufous tailed hare, Small India Mongoose, Common Mongoose. Fruit bat, Smaller Indian Civet, Rhesus Monkey, Indian Porcupine, Common otter. Common house rat, Smooth Indian Otter, Pale Hedge hog, Grey Musk shrew, Indian Fox, Wolf are also spotted. Out of these wild boar, blue bull, Sambhar, Jackal, Indian Porcupine, Indian Hare, Spotted deer are comparatively larger in numbers than other animals.

Birds sighted in this region are Blue tailed Bee eater, Green Bee eater, Blue throated barbet, Red rumped swallow and Golden oriole, grey partridges, red jungle fowl. Scavenger Vulture, Common Teal, Pintail Duck, Spot bill duck, Grey Koel, Indian Ring Dog, Crow Pheasant, Blue Rock Pigeon, Wild maina, House Crow, Barren owl, Common Babbler, House Sparrow, Common Sand Piper are found more in number than the other given in the detailed list

enclosed as Annexure "B". The main bird species which are not seen in other parts of State but are found in this tract are Himalayan Slaty headed Parakeet, Blue headed Rock thrush, Yellow backed Sunbird and paradise Flycatcher.

The wild life of this region is susceptible to disturbances from military exercises and damages as a result of forest fires, poaching and degradation of habitat.

110. Wildlife Conservation measures: -

The protection to wildlife can be afforded by adopting preventive, remedial and control measures. The preventive measures suggested are creation of public awareness, fencing of vulnerable areas, Immunization of cattle in the surrounding areas of this working circle to ensure that contagious diseases do not spread to the wild life. The awareness about the benefits of wildlife can be imparted effectively through seminars, lectures, screening films, slide shows etc. in educational institutions, community centers. The public at large and concerned staff should be suitably rewarded for prevention, investigation and prosecution of cases relating to wildlife offences. The crop damages due to wildlife should be assessed and suitable compensation be awarded at the earliest possible in genuine cases.

The remedial measures such as habitat improvement, pasture development, creation of water holes, provision of salt lick, and periodical census of wild life are the need of the hour. The control measures suggested are anti poaching through strengthening of infrastructure and communication network, early control burning before the breeding season, posting enough staff, etc.

111. Habitat Improvement: -

There should be no felling amounting to alteration of crop composition near the waterholes and on the paths frequented by the wild animals. Gap planting with species such as Neem, Mango, Amla, Bahera, Jamun, Ber, Mallah, Termanalia chebula etc must be carried out. Pasture development with palatable grasses such as Cenchrus, Stylo, Napier etc, will meet the fodder requirement of herbivores. Weeds should not be allowed to invade these areas to encourage natural regeneration of trees & especially grasses. Weed eradication through manual removal and planting areas with multipurpose fruit and fodder trees in order to enrich the natural regeneration existing in this area. Habitat, especially, for the threatened species and the species listed in the Schedule-I of the (Protection) Act, 1972 requires to be protected by all means, Areas rich in wild life are to be fenced and grazing should be prohibited.

One dead tree preferably of low commercial value per hectare shall be retained for shelter and resting of the wildlife. Unsound and hollow logs of commercially unimportant species be left in the forest to serve as shelter for wildlife. Saltlicks may be provided at important water holes which should not be less than 5 to 6 in an area of 1 sq. Km and should be regularly replaced.

Since water is the major limiting factor in the forest during the summers, augmentation of the various water sources by nala bunding, check dams etc shall be undertaken. For this purpose the location of various water sources-perennial as well as seasonal, shall be identified in each block forest and marked on the divisional/range maps and maintained properly.

112. Fire protection: -

Fire is potentially a deadly enemy of both forest and Wildlife. Rapid running forest fire particularly crown fires are very destructive to Wildlife. If it occurs in the nesting season of birds, breeding stock may be destroyed. Therefore fire protection measures such as preparation of fire lines, early control burning are suggested in the block Forest Working circle. The watch-towers constructed under OECF project can also be used for the fire control management.

113. Anti Poaching measures: -

For effective protection of wildlife from poaching and hunting, preventive patrolling, establishment of check posts, arming the staff with vehicles, weapons and communication devices etc are being done by D.F.O Wild Life Hoshiarpur. Number of check posts established in the department are being used for this purpose. Regular monitoring of the animals is being done. The amalgamation of Wild Life Preservation Wing with Forest Department is a step in the right direction to press more staff to deal with wild life protection, keeping in view the enormous threat facing the wild animals.

114. Census of Wildlife animals :-

Census of Wildlife animals give useful data for the management. To have a clear picture of Wildlife species, their diversity and changing patterns, the department should conduct at least one census during the period of this working plan.

Table No. 71**List of Animals found in Hoshiarpur District**

S. No	Common Name	Scientific Name
1	Black buck	<i>Antelope cervicapra</i>
2	Blue Bull	<i>Boselaphus tragocamelus</i>
3	Wild boar	<i>Sus scrofa</i>
4	Spotted deer	<i>Axis axis</i>
5	Barking deer	<i>Muntiacus muntlak</i>
6	Sambhar	<i>Cervus unicolor</i>
7	Hog deer	<i>Axis porcinus</i>
8	Pangolin	<i>Manis crassicaudata</i>
9	Jackal	<i>Canis aureus</i>
10	Rufous taledhare	<i>Lepus nigricollis</i>
11	Small India Mongosse <i>autopundatus</i>	<i>Herpostes</i>
12	Common Mongoose	<i>Herpestus edwardsi</i>
13	Fruit bat	<i>Rousettus leschenaultia</i>
14	Smaller Indian Civet	<i>Vivesrricula Indica</i>
15	Rhesus Monkey	<i>Lutra Lutra</i>
16	Indian Porcupine	<i>Rattus rattus</i>
17	Common house rat	<i>Rattus rattus</i>
18	Pale Hedge hog	<i>Paracchinus micropus</i>
19	Grey Musk shrew	<i>Suncus murinus</i>
20	Indian Fox	<i>Vulpes bengalensis</i>
21	Wolf	<i>Canis lupus</i>

Table No. 72**List of Birds found in Hoshiarpur District**

S. No	Common Name	Scientific Name
1	Little Grebe	<i>Podiceps luficollis</i>
2	Large Cormorant	<i>Phalacrocorax carbe</i>
3	Little Cormorant	<i>Phalacrocorax nigher</i>
4	Darter and Snakebird	<i>Anhinga rufa</i>
5	Grey heron	<i>Ardea cinorea</i>
6	Purple Heron	<i>Aredea purpurea</i>
7	Pond Heron	<i>Ardeola grayii</i>
8	Eastern Grey Heron	<i>Ardea cinerea rectirostria</i>
9	Eastern Purple Heron	<i>Ardea purpurea manilensis</i>
10	Cattle Egret	<i>Bubulcus ibis</i>
11	Large Egret	<i>Egretta garzotta</i>

S. No	Common Name	Scientific Name
12	Median Egret	<i>Egretta garzotta</i>
13	Little Egret	<i>Egretta garzotta</i>
14	Night Horon	<i>Nycticorax nycticorax</i>
15	Chestnut Bittern	<i>Ixobrychus cinnamomus</i>
16	Blank ibis	<i>Pseudibis papillosa</i>
17	Glossy ibis	<i>Pseudibis papillosa</i>
18	Greylog ibis	<i>Plegadis falcinellus</i>
19	Barheaded goose	<i>Anser anser</i>
20	Brahminy duck	<i>Tadorna ferruginea</i>
21	Pintail duck	<i>Anas acuta</i>
22	common teal	<i>Anas crecca</i>
23	Spotbill Duck	<i>Anas peocilorhyncha</i>
24	Mallard	<i>Anas Platyrhynchos</i>
25	Gadwal	<i>Anas strepera</i>
26	Wigeon	<i>Anas Penelope</i>
27	Garganey	<i>Anas quersuedule</i>
28	Shoveller	<i>Anas clypeata</i>
29	Redersted pochard	<i>Netta rufina</i>
30	Common pochard	<i>Aythya ferina</i>
31	Whiteeyed pochard	<i>Aythya hyroca</i>
32	Tufted pochard	<i>Aythya fulgiula</i>
33	Cotton Teal	<i>Nottapus coromeddellianus</i>
34	Comb Duck or Nakta	<i>Sarkidiernis melanotes</i>
35	Black winged Kite	<i>Elanus Caeruleus</i>
36	Pariah kite	<i>Milvus migrans</i>
37	Laggar Falcon	<i>Falco hiarmicus jugger</i>
38	Asiatic merlin	<i>Falco colu mmarius insignis</i>
39	Brahminy kite	<i>Haliastur indus</i>
40	Shikra	<i>Accipitar badius</i>
41	Imperial Eagle	<i>Aquila helieca</i>
42	Tawny Eagle	<i>Aquila rapax</i>
43	Lesser spotted Eagle	<i>Aquila pomavina</i>
44	Greater spotted Eagle	<i>Aquila clanga</i>
45	Fall's Fishing Eagle	<i>Haliaeetus leucoryphus</i>
46	Whitebeaked vulture	<i>Cyps benalensis</i>
47	Scavenger vulture	<i>Neophron perenopterus</i>
48	Pala Harrier	<i>Circus macrourus</i>
49	Narsh Harrier	<i>Circus aeruginosus</i>
50	Osprey	<i>Pondion heliactus</i>
51	Peregrine Falcon	<i>Falco peregrinus</i>
52	Black partridge	<i>Francolinus francolinus</i>

53
pondicerisnus

Grey partridge

Francolinus

S. No	Common Name	Scientific Name
54	Bush Quail	<i>Perdicula asiatica</i> <i>Punjaubi</i>
55	Grey Quail	<i>Coturnix coturnix cotrunix</i>
56	Kalij Pheasant	<i>Lophura leucomelana</i> <i>hamltoni</i>
57	Pea fowl	<i>Pavo cristatus</i>
58	Red jungle fowl	<i>Gallus gallus murghi</i>
59	Ruddy crake	<i>Amaurornis fuscus</i>
60	Brown crake	<i>Amsurornis akool</i>
61	Baillon's crake	<i>Porzana pusilla</i>
62	Whitebreasted water-hen	<i>Amaurornis pheenicurus</i>
63	Indian Moorhen	<i>Gallinul chloropus</i>
64	Purple moorhen	<i>Porphyric porphyrio</i>
65	Coot	<i>Fulica atra</i>
66	Pheasanttailed Jacana	<i>Hydrophasianus</i>
<i>chirurgus</i>		
67	White tailed lapwing	<i>Venellus leucurus</i>
68	Red wattled lapwing	<i>Venellus indica</i>
69	Peewit	<i>Venellus venellus</i>
70	Little ring Plover	<i>Charadrius dubius</i>
71	Kentish Plover	<i>Charadrius alexandrinus</i>
72	Curlew	<i>Numenius arguata</i>
73	Redshank	<i>Tringa tetanus</i>
74	Dusky Redshank	<i>Tringa ary-thropus</i>
75	Green Sandpiper	<i>Tringa ochropus</i>
76	Marsh Sandpiper	<i>Tringa stragnetabs</i>
77	Green shank	<i>Tringa nebularia</i>
78	Dunlin	<i>Calidris alpinus</i>
79	Curlew Sandpiper	<i>Calidris testacew</i>
80	Common Sandpipier	<i>Tringa hypoleuces</i>
81	Spotted Sandpiper	<i>Tringa gallingao</i>
82	Funtail snipe	<i>Callinago gallinago</i>
83	Little stint	<i>Callinago minutus</i>
84	Temrenik's stint	<i>Calidria Lemmenckii</i>
85	Ruff & feaf	<i>Philomachus pugnax</i>
86	Blackwinged still	<i>Himantopus</i>
<i>himantopus</i>		
87	Great stone plover	<i>Rscacus magnirostria</i>
88	Lesser Blackbacked gull	<i>Larus fuscus</i>
89	Lesser pratincele	<i>Gareola lactlea</i>

90	Great Blackheaded gull	<i>Larus ichthyaetus</i>
91	Brownheaded gull	<i>Larus ichthyaetus</i>
92	Blackheaded gull	<i>Larus ridibundus</i>
93	Whishered Tern	<i>Chilonias hybiida</i>

S. No	Common Name	Scientific Name
94	Gullbilled Tern	<i>Gelocheliden niletica</i>
95	Indian River Tern	<i>Sterna aurantia</i>
96	Blackbellied Term	<i>Sterna acutiecuda</i>
97	Indian Skimmer	<i>Rhynchops albicollis</i>
98	Blue Rock pigeon	<i>Columba livia</i>
99	Green pigeon	<i>Treron hocnicoptera phoenicoptera</i>
100	Indian ring dove	<i>Streptopelia decaicte</i>
101	Spotted dove	<i>Stroptapelia Chineusis</i>
102	Red Turtle Dove	<i>Stroptopelia trancuebraica</i>
103	Large India Parakeet	<i>Psittacula eupatria</i>
104	Rose Ringed Parakeet	<i>Pasittacula Kramori</i>
105	Blossom headed parakeet	<i>Psittacula cyanocephala</i>
106	Slaty headed parakeet	
107	Common Rawk Cuckoo	<i>Cuculus yarius</i>
108	Indian Cuckoo	<i>Cuculus micropterus micropterus</i>
109	Plaintive Cuckko	<i>Cacomantis merulinus passerinus</i>
110	Pieo creasted cuckoo	<i>Clamator Jacohinus Serratus</i>
111	Crow Pheasant	<i>Centropus sinonsis</i>
112	Dusky Horned Owl	<i>Eube Coromandus</i>
113	Brown Fish owl.	<i>Eubozoylonesis</i>
114	Mottled Wood owl	<i>Strix ocellata</i>
115	Barn Owl	<i>Ty to alba</i>
116	Spotted Owlet	<i>Athene brama</i>
117	Great Ahorned Owl	<i>Bubi bubo bengalonsis</i>
118	Shorteared Owl	<i>Asto flammous flammous</i>
119	House swift	<i>Apus affinia</i>
120	Palm swift	<i>Cypsiurus parvus</i>
121	Pied Kind fished	<i>Ceryle rudis</i>
122	Common king fisher	<i>Cerylo rudis</i>
123	White creasted king fished	<i>Halcyen smyrnesis</i>
124	Green Bee Eater	<i>Merops orientalis</i>
125	Blue tailed bee eater	<i>Merops superciliosus</i>
126	Indian Roller	<i>Merops superciliosus</i>

127	Hoopoo	<i>Upapupa epops</i>
128	Large green barbet	<i>Mogalaima zeylanica</i>
129	Crimson breasted barbet	<i>Mogalamia haemacephala</i>

S. No	Common Name	Scientific Name
130	Coppersmith	<i>Mogalaima haema cophela indica</i>
131	Wryheck	<i>Jynx torquilla</i>
132	Goldenbacked Wood-pecker	<i>Dinopium benghalense</i>
133	Yellow fronted pied	<i>Picoides maharattensis</i>
134	Ashy wned Fince Lark	<i>Eromoterix grisoa</i>
135	Refostailed finch Lark	<i>Ammomanes phoonicurus</i>
136	Redwinged bush Lark	<i>Mirarfa erythroptera</i>
137	Singing Bush Lark	<i>Galorida cristata</i>
138	CresedLark	<i>Galerida cristata</i>
139	Sky Lark	<i>Alauda gulgula</i>
140	Indian Collard Sand Margin	<i>Riparia riparia</i>
141	Common Swallow	<i>Hirundo rustica</i>
142	Wiretailed Swallow	<i>Hirundo smithii</i>
143	Grey shrike	<i>Lanius exeubitor</i>
144	Baybacked shrike	<i>Lanius vittatus</i>
145	Rufosbacked shrike	<i>Lanius schack</i>
146	Black drongo	<i>Dicrurus adsimilis</i>
147	Starling	<i>Sturnus vulgaris</i>
148	Pied Myna	<i>Sturnus contra</i>
149	Common Myna	<i>Acridotheres tristis</i>
150	Bank Myna	<i>Acridotheres ginguianus</i>
151	Tree pie	<i>Dendrocitta vagvunda</i>
152	Grey Horn bill	<i>Tocks hirortris</i>
153	House crow	<i>Cervus splendens</i>
154	Jungle crow	<i>Corvus macrohynchos culmintus</i>
155	Raben	<i>corvus cora</i>
156	Common wood shrike	<i>Tephrodornis pondicerlianus</i>
157	Scarlet Minivet	<i>Pericrocotus flammous</i>
158	Small minivit	<i>Pericrocotus cinnamonens</i>
159	White checked bulbul	<i>Pycnonotus café</i>
160	Red vented bulbul	<i>Phononotus cafe</i>
161	Yellow eyed Babbler	<i>ChrysommagineNsis</i>
162	Common Babbler	<i>Turdoides caudatus</i>
163	Striated Babbler	<i>Turdoidos grisea</i>
164	Jungle Babbler	<i>Turdoidos grisea</i>

165	Red Wrested fly catcher	<i>Muscicape parva</i>
166	Vorditor Fly catcher	<i>Muscicape thalessima</i>
167	White browed faintail fly catcher	<i>Rhipidura aurtola</i>
168	Brown fly catcher	<i>Muscicapa latirostris</i>
169	Paradise Fly catcher	<i>Muscicapa latirostris</i>
S. No	Common Name	Scientific Name
170	Indian Warn Warn warbler	<i>Prinia subflava</i>
171	Ashy wren warbler	<i>Prinia socialis</i>
172	Franklin's warbler	<i>Prinia hodgsoni</i>
173	Yellow bellied wren warbler	<i>Prinia flaviantris</i>
174	Scriated Marsh warbler	<i>Magalurus palustris</i>
175	Indian Creat Red Warbler	<i>Acrocephalus stentorous</i>
176	Blythree warbler	<i>Acrocephalus dumetoram</i>
177	Sand Lark	<i>Clandrella raytal</i>
178	Lesser Whitethreat	<i>Sylvia curruca</i>
179	Chiff Chaff	<i>Phylloscopus collybita</i>
180	Yellow browed loaf warbler	<i>Phylloscopus</i>
<i>znornotus</i>		
181	Greyhead Fly catcher warbler	<i>Phylloscopus znornotus</i>
182	Blue throat	<i>Eritacus syecicus</i>
183	Magpic Robin	<i>Copsychus saularis</i>
184	Black rodstart	<i>Phyacrhis ochruras</i>
185	Plumbeous Redstart	<i>Rhyacorhis fuliquinosus</i>
186	Whitesped Redstart	<i>Chaimarrornis laucocephalus</i>
187	Collared Bush Chat	<i>Saxicole torquata</i>
188	Pied Bush Chat	<i>Saxicole caprata</i>
189	Pied Chat	<i>Conantha picata</i>
190	Black throated thrush	<i>Turdus ruficollis</i>
191	Grey tit	<i>Parus major</i>
192	Wall Creeper	<i>Tichodroma muraria</i>
193	Tree pipit	<i>Anthus trivialis</i>
194	Paddyfied pipit	<i>Motacilla gilava thunberqi</i>
195	Greyheaded yellow wagtail	<i>Motacilla gilava thunberiqi</i>
196	Yellow headed wagtail	<i>Motacilla citreola</i>
197	Black yellow wagtail	<i>Motacilla flava calcarate</i>
198	Grey wagtail	<i>Motacilla caspica</i>
199	Indian white wagtail	<i>Motacilla albe dukkunenis</i>
200	Masked Wagtail	<i>Motacilla personata</i>
201	Purple sunbird	<i>Nectarinia asiatica</i>
202	Large pied wagtail	<i>Motacilla maderspatensis</i>
203	White eye	<i>Zosterops palpobrosa</i>
204	Spanish Sparrow	<i>Masser domesticus</i>
205	Spanish Sparrow	<i>Passer Hisapniclonsis</i>

206	Crosted Buntings	<i>Melophus lathami</i>
207	Black headed	<i>Emberiza stewarti</i>
208	Yellow throated sparrow	<i>Potrovia zenthecollis</i>
209	Indian weaver bird or Baya	<i>Ploceas phillippinus</i>
210	Black throated weaver bird	<i>Ploceas Bengalansis</i>

S. No	Common Name	Scientific Name
211	Streaked weaver bird	<i>Ploceas manyar</i>
212	Red Munia	<i>Estrilda amandava</i>
213	Spotted Munia	<i>Lonchura Punchu lata</i> <i>Punchulata</i>
214	White throated Munia	<i>Lonchura malabarica</i>
215	Braminy Myhah	<i>Sturnus pagodrun</i>
216	Tailor Bird	<i>Orhethonues sutorius</i>
217	Golden urial	<i>Oriulus oriulus Kundoo</i>
218	Kool	<i>Eudynamy scolopacea</i> <i>scolopacea</i>
219	Common sand grouse	<i>Temninic austus</i>
220	Imperial Sandgrouse	<i>Plerocles orientalis</i>
221	Pitta	<i>Pitta brachyuran</i> <i>brachyuran</i>
222	Grey headed gold finch	<i>Gardulinae carduelinae</i> <i>cunicips</i>

CHAPTER XIV

J.F.M (Over lapping) Working Circle

14.1 Forest Management:

As envisaged in the National Forest Policy, 1988, the participation of people in the protection, management and development of forest has assumed more and more significance.

In Garhshankar, Hoshiarpur and Dasuya Divisions, the forests are mainly in the form of blocks and strips along canals, roads, embankments etc. There is much scope of Joint Forest Management on such strips and blocks forest land, most of which has been declared as protected areas under the Wild Life Protection Act, 1973. Apart from this notified areas under PLPA have been dealt in separate Management Plan and there also there is vast scope of JFM as these areas are either individually owned or common lands.

However, keeping in view the limited areas under tree cover, the non-availability of vacant areas where plantation could be carried out, the need for a comprehensive approach towards involving people in the establishment of new areas which may be covered with trees is felt. Under the scheme, people may be encouraged to grow trees in their own farms, strips adjoining their field and in return, government and the people can share the benefits derived therefrom.

Towards this end, the Government has declared a policy of benefit sharing with the people.

The Forest Development Agency (FDA) was established in each Forest Division for the afforestation works on private, Panchayat and Government lands, the funding was supported by the National Eco Development Board (NAEB), Ministry of Environment and Forests, Government of India.

Recently in the place of FDA, SFDA has been constituted at State Level for further working and better supervision of the afforestation works.

The Government of Punjab had issued guidelines for Joint Forest Management (JFM) in forests of Kandi area of Punjab vide resolution No.46/27/93-Ft-III8284 Dated 14.07.1993. These were subsequently revised in 1995. In super-session of earlier JFM guidelines and their subsequent amendments, the following JFM guidelines are now being issued.

1. The process of Joint Forest Management (JFM) should be instituted in the Kandi area of the state. JFM provisions will be applicable on the Reserved, Protected and Un-classed Forests (hereinafter called forest) of Kandi area of Punjab. While implementing the JFM programme following will be kept in view.

- Local people's interest and responsiveness prior to starting the programme at any given location.
- Initial emphasis should be on places where good and constructive local leadership is forthcoming and forest dependency is higher.
- The process should provide for local people's requirements and needs in planning, including some non-forestry developmental initiatives and programmes to be implemented by the Punjab Forest Department.
- There shall be regular annual review of the programme by the Forest Department, involving other stakeholders for the lessons learnt, and also to identify strengths and weaknesses so as to amend the rules and regulations to steer the course of events towards a positive direction in the overall interest of forest conservancy and local people's development.

Constitution of FPCs and JFMCs in these areas have been vastly dealt under this notification. This notification has been annexed as Annexure-II.

14.2 Special objects of Management:

1. To give adequate protection to the existing forest resources in the division through effective people's participation.
2. To maintain and improve the quality of the environment, that is, the existing vegetation/tree cover should be maintained for the conservation and improvement of the environment and for the better living conditions for human beings.
3. To reduce the pressure on the forests by diverting the pressure with the alternative sources of energy.
4. To manage the forests in such a way that there is effective sharing of usufructs to the people in a sustainable manner.
5. To create awareness among the people about the importance of the forest resources/tree cover for a better future to humanity.

6. Overall socioeconomic development of the fringe areas.

14.3 Government Policies on Joint Forest Management: -

The Government of Punjab passed a resolution on 14th July 1993 for the constitution of JFM committees. This was revised vide resolution dated 18th November 2003, keeping in mind the guideline of GoI issued in this regard. Later all the JFMCs in each forest division were coordinated under the Forest Development Agency (FDA's) for that particular division. The main objectives of this agency are: -

- Conservation, management and increase in the forest cover in the project area, in a sustainable manner.
- Conservation of soil and water in the project area.
- Employment generation through creation of productive community assets.
- Formation of village level committees which will carry out the activities mentioned above.
- Employment generation to most needy section of the society, particularly women, SC/ST and landless labourers and encourage them to be self-sufficient.
- To train the rural women in income generating activities and to improve their social, economical and health conditions.
- To avail the alternative sources of energy to the rural people, and subsequently decreasing their dependence on forest for fuel.
- To inculcate the idea of conservation of natural resources among the members of JFMs and other people.
- To ensure the active people participation in the implementation of the different objectives of the project.
- To Share the usufructs with the local people.

To effectively implement this objectives, a percentage of the allocated funds can be used for entry point activities which are taken up in the JFM area so that active coordination between the Forest Development agency and the villagers improves. Micro plans are also to be drawn up for investment and production activities after taking into consideration the local needs of the people. Self Help Groups can also be constituted. The money saved can be used for developing other income generating activities. Along with these there is increased need to improve the marketing places processing facilities so that the villagers world is open to major marketing and processing facilities so that the villagers world is open to major marketing places economically.

As the self reliance of the Villagers increase, their dependence on the forests and resulting, destruction of these valuable resources gradually decreases.

The FDAs have an executive committee and a general body. The conservator of Forests heads the executive body of the FDA. There would be representation from all the line departments and JFM committees. The Divisional Forest Officer would be the Chief Executive Officer of the FDA. The executive body has to meet once in every year to elect its office holders from among the JFMC members. The general body also should meet regularly in a year to decide on their activities.

The constitution of the FDA's will bring new zest into the working of the Joint Forest Management Programme in Punjab.

14.4 Present Conditions of Forest:

The natural forests have deteriorated alarmingly for the reason that they were not allowed growing naturally up to maturity for potential yield. The plantations raised artificially could not be protected to their rotation ages except in a few areas. Constraint to protection of forests is mainly due to the close vicinity of the Forest with towns.

The forest areas have also depleted considerably and more and more areas are going out of management every year. The result of deterioration and depletion of forests is that an acute crisis of timber, fire wood and other forest produces exists in the markets and particularly the timber is out of reach to the common people.

14.5 Duties and Responsibilities in the Changed situation:

1. The existing forests are to be maintained and improved for conservation & amelioration of environment and other living conditions.
2. Protection is the most important Challenge that the forests are facing and JFM should ensure social fencing in all the areas where the problem exists.
3. Forest protection forces should be formed to aid the forest patrolling parties to protect the forests.
4. The demand of timber, fuel wood and other forest produces are to be met up from the existing forests by way of sharing of usufruct benefits in lieu of protection.
5. To ensure smooth harvesting of the forest produce by the forest department.
6. To integrate the interest of the forest dwellers with the forest management.
7. Immediate fencing of the borders to prevent the illegal transport of timber to Punjab.

The above objectives can be achieved and ensured through the successful protection and conservation of the existing forests.

14.6 Implementation of Joint Forest Management Policies in Garhshankar, Hoshiarpur and Dasuya Divisions: -

Since its implementation JFM has started in these divisions, the lists of FPCs and JFMCs is as under: -

FPCs & JFMCs of Garhshankar Forest Division: -

Sr.No	Name of FPC	Executive Comiittee member	General Body Members	Forest Area
1	Kangar	9	80	432
2	Saoli	11	52	304.3
3	Khanni	11	136	779.12
4	Harjiana	7	84	107.2
5	Rail Majra	11	220	1109
6	Chandiani Kalan	7	120	250.5
7	Bhaddi	9	140	1279.3
8	Ballowal	6	60	737.1
9	Raipur	11	112	496
10	Bannah	11	128	434.8
11	Nangal	9	168	140.5
12	Fatehpur	9	280	203.5
13	Asron	15	160	316
14	Mahipur	13	120	621.5
15	Tonsa	11	100	551.2
16	Soona	11	240	850
17	Maili	9	160	2755
18	Chak Narial	11	100	375
19	Namolian	9	40	45
20	Lalwan	11	260	1342
21	Kothi	13	232	481.5
22	Bichoi	11	100	1982
23	Bheru	13	132	1321
24	Fatehpur	13	40	244.4
25	Mahdood	13	60	693.6
26	Lasara	11	20	430
27	Gajar	11	40	815.4
28	Bhatpur	11	30	354.5
29	Bilron	11	60	883.2
30	Rampur	13	36	790
31	Lehra	13	160	242.4
32	Hajipur	11	80	566.5
33	Chandpur Roorkee	11	32	790.7
34	Mahindvani	9	80	867.6
Sr. No	Name of FPC	Executive Comiittee	General Body	Forest area

		member	Members	
35	Jhandupur	11	120	276
36	Boothgarh	11	180	269.2
37	Kukarsuha	11	30	425.5
38	Sahibajpur	7	30	242
39	Nainowal	11	60	213
40	Mojhot	13	128	633
41	Raju Majra	13	200	162
42	Golu Majra	13	40	146
43	Bagowal	11	56	156.5
44	Nighi	15	80	471
45	Kalar	15	84	405
46	Mohan Majra	11	140	347
47	Majra Jattan	15	240	540.9
48	Natha Nangal	11	20	27.5
49	Adoyana	15	100	101
50	Barhdi	9	80	189
51	Saunkri	5	28	315.9
52	Mangupur	15	120	614.4
53	Malewal	13	226	560
54	Baddowal	9	18	311.2
	Total	599	5842	29997.92

FPCs & JFMCs of Hoshiarpur Forest Division: -

Sr No	Name of Committee	FPC/JFMC	Executive Committee Members	General Body Members	Forest Area
1	Dada	JFMC	10	204	2450.00
2	Nara	do-	9	140	1568.00
3	Manjhi	do-	8	135	1611.00
4	Jahan Khelan	do-	8	135	278.00
5	Mehlanwali	do-	11	100	31.20
6	Bassi Purani	do-	8	70	56.00
7	Satial	do-	9	40	96.40
8	Chohal	do-	9	125	900.00
9	Thathal	do-	6	130	38.40
10	Nari	do-	8	80	1239.60
11	Saleran	do-	9	40	1524.00

Sr No	Name of Committee	FPC/JFMC	Executive Committee Members	General Body Members	Forest Area
12	Baruti	JFMC	9	192	1196.40
13	Mehngrowal	FPC	10	106	2618.00
14	Kapahat	do-	9	40	865.00
15	Malout	do-	9	40	1485.60
16	Kort	do-	9	43	548.00
17	Patial	do-	9	60	1467.20
18	Ariniala Shahpur	do-	10	84	651.20
19	Mustapur	do-	11	45	180.40
20	Basi Babu khan	JFMC	11	100	16.80
21	Bassi Ballon	do-	11	200	22.80
22	Janauri	do-	9	100	2124.80
23	Tappa	do-	9	80	0.00
24	Chhameri Patti	do-	9	70	0.00
25	Phaphial	FPC	9	40	191.60
26	Dandoh	do-	9	80	649.20
27	Chak Noor Ali	JFMC	9	59	11.20
28	Chak Ladhian	do-	9	203	113.60
29	Shekhan	do-	11	100	56.80
30	Mastiwal	do-	10	208	49.60
31	Mussa	do-	10	30	6.40
32	Darapur	do-	9	121	18.60
33	Dholbaha	do-	6	23	2208.00
34	Ramtatwali	do-	7	327	1322.00
35	Manhota	FPC	8	20	315.20
36	Thana	do-	9	130	1060.60
37	Katohar	JFMC	9	35	266.60
38	Khangwari	FPC	7	133	959.60
39	Naroor	JFMC	8	150	1147.00
40	Koi	FPC	6	90	892.00
41	Baruhi	JFMC	8	34	503.60

Sr No	Name of Committee	FPC/JFMC	Executive Committee Members	General Body Members	Forest Area
42	Kukanet	do-	8	281	906.00
43	Dehrian	do-	8	16	2856.80
44	Bahera	FPC	8	50	923.60
45	Raghuwal	do-	6	33	477.20
46	Barrikhad	JFMC	11	71	1074.40
47	Bhatoli	do-	9	42	56.00
	Total		414	4635	37034.40

FPCs & JFMCs of Dasuya Forest Division:-

Sr No	Village	FPC/JFMC	Exucutive Committee Members
1	Sansarpur	FPC	15
2	Makkowal	FPC	13
3	Aglour	FPC	11
4	Sangwal	FPC	13
5	Rampur Haler	FPC	15
6	Hardo Neknama	FPC	11
7	Senso	FPC	9
8	Bassa	FPC	5
9	Sandwal	FPC	7
10	Beh Atta	FPC	13
11	Beh Nangal	FPC	13
12	Pohari	FPC	11
13	Labbar	FPC	15
14	Chamuhi	FPC	11
15	Narangur	FPC	11
16	Tohlu	FPC	15
17	Bringali	FPC	0
18	Beh Chur	FPC	13
19	Beh Khushala (Rerupatti)	FPC	11
20	Beh Khushala (Jhotapatti)	FPC	13
21	Ramgarh Kartoli	FPC	13
22	Bhavnaur	FPC	11
23	Amroh	FPC	15
24	Alera	FPC	11
Sr No	Village	FPC/JFMC	Exucutive Committee Members

25	Dharampur	FPC	13
26	Bhambotar Bhamot patti	FPC	11
27	Nangal Khanaura	FPC	11
28	Bhuter	FPC	13
29	Beh Ranga	FPC	13
30	Plahar	FPC	7
31	Beh Chur Taglaur Patti	FPC	13
32	Dhalal	FPC	13
33	Kothi	FPC	11
34	Bhol Badmania	FPC	13
35	Bhatoli	FPC	15
36	Bhol Kalota	FPC	7
37	Bering	FPC	11
38	Dadiyali	FPC	9
39	Chattapur	JFMC	7
40	Beh Fatto	JFMC	7
41	Beh Vidya	JFMC	7
42	Beh Dullo	JFMC	7
43	Rakri	JFMC	13
44	Beh Mawa	JFMC	11
45	Beh Lakhan	JFMC	9
46	Ban Karanpur	JFMC	11
47	Heer Beh	JFMC	9
48	Ragowal	JFMC	5
		TOTAL	521

CHAPTER XV

NON TIMBER FOREST PRODUCE (OVERLAPPING)

WORKING CIRCLE

15.1 General Constitution

The general principles followed in constitution of this working circle and JFM Working Circle as these areas are suited for cultivation of different kinds of NTFPs. However the collection or management of NTFTs are not systematic everywhere. In some parts of Dasuya Forest Division traditionally it is being done by some people.

15.2 General Character of the Vegetation.

The species yielding non-timber forest produces grow everywhere in the forests of the division with other vegetation. The occurrence of different kinds of forest types in the division has been already been described under different working circles.

Leaves, flowers, seeds, barks, roots, etc which are non-wood forest produces are collected from herbs, shrubs and trees of the forests for their medicinal and economical values. Thatch, Palm leaves, grass, Mango, Jamun, etc are collected from the forests in huge quantities. Honey is a non-wood forest produce which is also collected from the forest areas. Apart from the non-wood forest produces mentioned here and the timbers and the fuel wood, any other produce.

Bamboo is another main specie giving NTFP product, it will be regulated as per detail given in **paragraph 15.10**.

Chirpin resin (*Biroja*) is another NTFP found in chil forests of Dasuya and Hoshiarpur Forest Divisions. But this is not extracted due to the fact that chil crop in this ecofragile area needs special conservation measures and therefore this NTFP's extraction has been stopped to give a rest to this crop. It was stopped in Eighties.

15.3 Area Statement.

This working circle comprises of the whole area under this working plan covering all the three Forest Divisions and especially those falling under plantation working circle, JFM working circle as these areas are suited for cultivation of different kinds of NTFPs.

15.4 Special Objects of Management

Primary Objectives

1. To protect, conserve and improve the non-wood produces (minor forest produces) which have not been covered by the prescriptions of other working circles.
2. To build up the growing stock of non-wood forest produces and medicinal plants in proper composition and condition.
3. To raise plantation of medicinal plant species.
4. To increase the market and scope for processing of these medicinal plants to economical products.
5. To bring the cultivation and marketing of NTFPs under the ambit of J.F.M and Forest Development Agency so that it gradually becomes a source of livelihood for the fringe residents.

Secondary Objectives

1. To increase the value of the forests by introducing the commercially valuable non-timber forest produces.
2. To raise crop as under-storey plantation and maintain them.
3. To conserve the natural heritage by preserving the existing forests with their variety of flora and fauna and to conserve the genetic resource.

15.5 Analysis and Valuation of the Crop

Amla, Aam, Jamun, Khazur, Arjun, Ashok, Neem, Bel, Pipal, etc tree species have high economical and medicinal values for their leaves, flowers, fruits, seeds, barks, roots, etc. and occur in the forests in good numbers, Brahmi, Tulsi, Pudina, Sarpagandha, Kalamegh, etc which are very important medicinal plants and are collected from forests. Bamboo found in Block and Strip Forests is to be managed properly to regulate its growth. Their occurrence is not so adequate. Kana and Kahi grasses are available plenty in the forests. Prime specie Amla is found in most of the block forests of this working plan. Its extraction and its marketing needs scientific regulation.

Natural regeneration of the species yielding non-wood forest produces (or minor forest produces) is usually inadequate. Grazing and other biotic interference exist and the natural regeneration is affected.

15.6 Silvicultural System:

The Silvicultural system to be followed is the Selection System. Only the silviculturally available non-wood forest produces are to be extracted with due importance to the

rotation of the specific species. The trees, which have medicinal values for their fruits, seeds, barks, leaves, etc are to be protected and the vegetative parts are to be extracted scientifically.

Plantation of medicinal plants and other highly valuable NWFP are to be raised following the standard method.

Natural regeneration in patches of medicinal plants and other NWFP may be supplemented by artificial planting.

The selection of the areas is left to the discretion of the territorial DFOs and it should be tried to raise these plantations through JFM beneficiaries after markets are sought so that they get some revenue. Demonstration centers like Herbal gardens and Forest Parks to be promoted to raise more awareness among common public.

15.7 Choice of Species:

Aam, Amrud, bahera, Ber, Arjun, Jamun, Neem, Mahua etc medicinal tree species are to be mixed with major plantation species to be raised in the Plantation Working Circle and JFM Working Circle.

The Plantation of medicinal plants of brahmi, sarpagandha, tulsi, pudina, kalamegh, etc and other herbs, which are prioritized species are to be raised in herbal gardens as demonstration plots as well as under storey inter crops to obtain revenue.

Good grass areas of Kana and Kahi are to be maintained for extraction by the villagers.

15.8 Exploitable Size and Rotation:

Non-wood forest produces are derived from herbs, shrubs, climbers, grasses, trees etc which are annual, bi-annual and perennial in longevity. So the herbs, shrubs, climbers etc are to be collected annually or bi-annually depending upon the life span of the individual species.

The flowers, fruits, seeds, barks, leaves and other vegetative parts are to be collected from the perennial trees depending on their phenological characters, i. e. flowering time, fruit maturing time, seed maturing time, etc. Barks and roots from trees are to be collected only with permission from the Divisional Forest Officer. The trees yielding non-timber forest produces are not be felled for extraction before attaining their age of physical rotation.

15.9 Prescription of treatment:

There is no hard and fast rule for collection of NTFP. But only the silviculturally available produces are to be allowed for collection and if any area is found deficient of any

species, such species is not to be allowed for collection. The calculation of yield cannot be done for many species of NTFPs as they are neither systematically harvested nor grown in the Division at present.

15.10 Bamboo resources and Bamboo working:

Bamboo working is prescribed in all the Block and Strip Forests of this Working Plan. Strip Forests where Bamboo has attained harvestable size should be worked on triennial basis. This should be start from 2012-13 on all the eligible areas. In Garhshankar Forest Division bamboo plantation on BDC as resulted in about 160 clumps of bamboo on right side from RD 133 to 146. It should be worked as prescribed above. Similarly bamboo should also be worked in all the block forests.

Detail of bamboo resources and its working is prescribed as detailed below: -

GARHSHANKAR FOREST DIVISION

Forest	Number of clumps (aprox.)	To be worked in				
		2012-13	2015-16	2018-19	2021-22	2024-25
BDC, RD 133 to 146	160					

HOSHIARPUR FOREST DIVISION

Forest	Number of clumps (aprox.)	To be worked in				
		2012-13	2015-16	2018-19	2021-22	2024-25
Ram Tatwali	122	2012-13	2015-16	2018-19	2021-22	2024-25
Dhehrian	7920	2012-13	2015-16	2018-19	2021-22	2024-25
Barri Khad	502	2013-14	2016-17	2019-20	2022-23	2025-26
Malot	107	2013-14	2016-17	2019-20	2022-23	2025-26
Husainpur	19	2012-13	2015-16	2018-19	2021-22	2024-25
Patiarri	78	2012-13	2015-16	2018-19	2021-22	2024-25
Manjhi	155	2012-13	2015-16	2018-19	2021-22	2024-25
Baroti	210	2012-13	2015-16	2018-19	2021-22	2024-25
Tharoli	205	2013-14	2016-17	2019-20	2022-23	2025-26
Nari	27	2013-14	2016-17	2019-20	2022-23	2025-26
Nara	155	2013-14	2016-17	2019-20	2022-23	2025-26
Total:	9500					

DASUYA FOREST DIVISION

Forest	Number of clumps (aprox.)	To be worked in				
		2012-13	2015-16	2018-19	2021-22	2024-25
Behbowal Chhannia	32	2012-13	2015-16	2018-19	2021-22	2024-25
Mawa Bath	08	2012-13	2015-16	2018-19	2021-22	2024-25
Sagran	10	2012-13	2015-16	2018-19	2021-22	2024-25
Dadial	04	2012-13	2015-16	2018-19	2021-22	2024-25
Chattarpur	2140	2012-13	2015-16	2018-19	2021-22	2024-25
Total:	2194					

15.11 Planting Cycle.

The planting cycle to be followed is ten years corresponding to the period of the plan. The operation for artificial planting in the gaps for supplementing the natural regeneration, raising plantation of medicinal plants, raising medicinal tree species mixing with the principal species, etc. are to be carried out in the available areas. Other improvement works are also to be carried out in these areas. The areas to be selected for raising these plantations are left to the discretion of the respective Divisional Forest Officers.

15.12 Method of Treatment

1. Wherever medicinal tree species are mixed with the principal plantation species they are to be retained during tending, thinning, etc operation which are to be carried out for establishment of the principal species.
2. During tending, thinning, etc operations in these areas, if any patch of medicinal plant is found which requires tending, thinning, etc for its improvement such operations are to be carried out.
3. Non-wood forest produces or minor forest produces are as important as major forest produces and have pronounced uses in human life. So, all the forest field officers should remember during carrying out different operations in the forests that the NWFP are protected, maintained and improved.

15.13 Miscellaneous Regulations

1. No lopping of Bahera, Jamun, Neem and Mango trees is permissible.
2. Lopping of Khajur leaves are permissible only to after ensuring that a unit of 5 leaves per tree are left.
3. The NTFP plantations raised are to be adequately tended according to standard procedure and schedule.
4. Grazing is totally prohibited in the areas where NTFP plantations are raised.
5. Adequate fencing is to be provided necessary.

CHAPTER XVI

FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

16.1 General Constitution

The general principle followed in constitution of this working circle has been explained in earlier chapters. This working circle has been formed for protection of forests wealth by way of regular patrolling in the forest as well as non-forest areas of the division. Forest resources particularly timbers and fuel wood is very valuable and is growing in nature in open conditions. Forests meet up the basic needs of the people. Forest produces are largely used as industrial raw material .Forest i.e. green vegetative covers maintain environment living conditions for human being and all other animals. So its protection is necessary and is to be ensured.

The pressure on the forests is also very high as there is increase in population and because of the easy money it brings through illegal activity. The Working Circle extends over the whole of the area of this working plan comprising all the Forest Divisions as the whole of the forests is under severe biotic especially human pressure. The protection can also be from other stresses like fire, soil erosion, weeds and firewood collectors.

16.2 Special Objects of Management

1. To provide protection of the valuable forests of Garhshankar, Hoshiarpur and Dasuya Forest Divisions.
2. To prevent free flow of illegal timber.
3. To protect the forests against fire.
4. To adopt good soil conservation measures.
5. Increase social fencing measure through effective JFM programmes.

16.3 Provisions.

Forest is a renewable resources and its management cannot be successful without its protection. So there are legal provisions for protection of forests in Indian Forest Act 1927 and its Punjab amendments and Punjab Forest Rules.

All the forest personnel engaged in the management of forests have been duly empowered for protection of forests. The Divisional Forest Officer is in overall charge for protection of forests in the division and the Range Officers, Block Officers and Forest Guards in their respective protection units to assist him.

16.4 Legal Provisions.

The DFO is in overall charge of the protection of forests in the division. The Range Officer is entrusted with the responsibilities of enforcing protection measures in the Range area by way of patrolling and detecting forest offences. He is required to draw offence reports and send them to the DFO to get it sanctioned either for compounding of offence or for prosecution which has to be decided by the DFO.

The Block Officer is entrusted with the responsibility of enforcing protection measures in the Block area by way of patrolling and detecting the forest offences. Block forest officer is also empowered for accepting the compounding fee from the offenders as well as sending the cases for prosecution. Foresters are directly assisted by the Forest Guards posted under him. The Forest Guards posted in the beats are entrusted with the power of detecting forest offences and they are required to report to the Block Officers under whom their services have been placed.

The new concept of JFM also has provisions for formation of Self Help Groups, which can be given the responsibility of protection in lieu of the usufructs that they receive from those areas.

16.5 Execution of Search Warrants.

The forest officers up to the rank of Range Officer are empowered with the power of executing Search Warrants in any premises for finding out the hidden illegally collected forest produces.

16.6 Powers of Arresting the Offenders.

The forest officers up to the rank of foresters may arrest the forest offenders in case of necessity. The offender/Offenders is/are to be released or handed over to the nearest police station within 24 hours from the time of arrest for other legal actions which are required to be taken as per rule.

16.7 Collection of Information.

In-charge, Range Officer and Block Officers should maintain a system of collection of information on illicit felling in the forests, extraction of illegal produces from the forests, illegal transport to the markets and other places, utilization of huge timbers in Government construction. Direct patrolling may not be effective in all such cases.

16.8 Special patrolling during night.

Though there is no unit of Special Task Force in the division but the forest guards do special checking operation during night-time.

16.9 Special measures against smuggling of forest produces across border.

Smugglers, miscreants and dishonest traders organize illicit felling in the forests and carry valuable timbers. The timbers for the market are also smuggled out for more profit. These sorts of prolonged unlawful activities create a condition of deficiency in supply and availability of timbers and other forest produces in the market, which likes the price in market. As a result the common people cannot purchase the timbers for their essential needs. Such a situation in the state cannot be allowed to continue in the interest of the people. Organized illicit felling in the forests is to be resisted by special patrolling measures. The police station posts are to be reminded from time to time for effective control of smuggling out of timbers and other forest produces from the state. Any forest produce that is detected by any military, police or other paramilitary forces have to be handed over to the nearest forest official.

16.10 Posting of Young Healthy Personnel in Patrolling Parties.

Young, energetic and physically fit forest personnel should be posted in the patrolling parties for performance of tough duties. Aged, unhealthy and ill personnel should not be given the protection duty. More over should be more recruitments and patrolling staff should have regular transfers also.

16.11 Other Protection measures.

Other Protection measures like protection from fire has to be taken care of by making adequate number of fire lines and their good maintenance from time to time. Soil conservation measures have also to be adopted. Silvicultural systems like selection system can aid to improve soil conservation measures as it least disturbs the forest soils.

CHAPTER XVII

Miscellaneous Regulations

17.1 Petty Fellings:

The following kinds of trees may be marked for such fellings.

1. Trees required for scientific works at the Research Circle, Hoshiarpur and FRI, Dehradun.
2. Trees required to be felled for establishing new nurseries, extension or alteration of nurseries.
3. Trees required for establishing fire-lines, etc.

4. All deviations, which permanently alter the basis of management laid down in a working plan, will require prior sanction of the PCCF. All deviations, which do not permanently alter the basis of management and with the necessity of which he agrees, may be approved and sanctioned by the Working Plan Conservator on behalf of the PCCF. In case where there is difference of opinion between the Working Plan Conservator and the Territorial Conservator, the former will refer them to the PCCF for instructions, The PCCF/CFWP, as the case may be, will countersign the deviation statement. (as per para 83 of NWPC)

5. Minor deviations can be sanctioned at the level of the CF Working Plan or the PCCF as the case may be; but the PCCF, before sanctioning the National Working Plan Code 46 major deviations of following nature, will necessarily take prior approval of the Regional CCF of the Ministry of Environment & Forests: -

- (i) Change in Silvicultural System;
- (ii) Clear Felling of Natural Forest;
- (iii) formation of new Felling Series; and
- (iv) large scale felling due to natural calamities, which cannot be adjusted against future yield. (as per para 83 of NWPC)

The petty fellings will be shown in the control forms if the trees which count towards yield are felled. The trees which do not count towards yield will not appear in the control forms and their felling shall be regulated by the Conservator of Forests, Shiwalik Circle, Chandigarh.

17.2 Construction of Roads/Link roads.

No construction of roads/link roads should be allowed without the sanction of competent authority/GOI as they attract the provisions of the Forest (Conservation) Act, 1980.

17.3 Buildings:

A Large number of buildings already exist in the division for office and residential accommodation of the staff. In fact, a good amount of construction work was done during the last part of the previous working plan period.

List of existing buildings in Garhshankar Forest Division

Sr No	Name of Building	Garhshankar	Mahilpur	Balachaur	Kathgarh
1	Asstt. Qtr	1	-	-	-
2	Supdt. Qtr	1	-	-	-
3	DFO Resi	1	-	-	-
4	DFO Office	1	-	-	-
5	Dy.DFO Resi	1	-	-	-
6	Clerk Qtr	1	-	-	-
7	Class IV Qtr	5	2	-	-
8	Shed	4	-	-	-
9	Garrage	2	-	-	-
10	Range Office	1	1	1	1
11	Range Resi	1	1	1	1
12	Forester Qtr	2	3	1	-
13	F.G Hut	6	6	3	1
14	Forest Rest Hoyse	1	-	-	-
15	F.R.H/Inspection Hut	-	2	-	-
16	Chowkidar Qtr	1	-	-	-
17	Motor Room (Misc)	-	1	-	-

Sr No	Name of Building	Garhshankar	Mahilpur	Balachaur	Kathgarh
18	Fire Watch Tower	-	1	-	-
19	Seed Store	1	-	5	-
20	Bath room	-	-	4	-
21	Labour Hut	-	-	-	1
22	Pump Houses	-	-	-	1
Total		31	17	15	5

List of existing buildings in Hoshiarpur Forest Division

Period Location	Name of Range	Sr No	Name of Building
1946-47	Hoshiarpur	1	Forest Rest House
	Nara		
	-do-	2	Forest Guard Quarter
	-do-		
	-do-	3	Class-IV Quarter
	-do-		
1972-73	-do-	4	F.G. Hut
	Dada		
1973-74	-do-	5	Forestor Quarter
	-do-		
1974-75	-do-	6	F.G. Hut
	Chaksadhu		
	-do-	7	Forestor Quarter
	-do-		
1967-68	-do-	8	-do-
	Bassi Jana		
-do-	-do-	9	F.G. Hut
	-do-		
1961-62	-do-	10	R.O Office –cum- Resi.
	Hoshiarpur		
-do-	-do-	11	Clerk Quarter
	-do-		
-do-	-do-	12	F.G. Hut
	-do-		
-do-	-do-	13	Class-IV Quarter
	-do-		

Period Location	Name of Range	Sr No	Name of Building
1962-63	-do-	14	Range store room
-do-	-do-	15	Forestor Quarter
-do-	-do-	16	F.G. Hut
1963-64	-do-	17	Timber Store
1965-66	-do-	18	Jeep Shed
-do-	-do-	19	Seed Store
-do-	-do-	20	Store Room
-do-	-do-	21	Tractor Shed
1977-78	-do-	22	F.G. Hut
1980-81	-do-	23	-do-
1983-84	Kharkan	24	F.R.H
-do-	-do-	25	Supdt. Quarter
-do-	Bassi Jana	26	Asst. Quarter
1984-85	-do-	27	Clerk Quarter
-do-	-do-	28	-do-
-do-	-do-	29	-do-
-do-	-do-	30	-do-
-do-	-do-	31	-do-
-do-	-do-	32	-do-
-do-	-do-	33	Gerrage

Period Location	Name of Range	Sr No	Name of Building
1985-86	-do-	34	-do-
	Hoshiarpur		
-do-	-do-	35	Forestor Quarter
	Saleran		
-do-	-do-	36	Shed
	Hoshiarpur		
-do-	-do-	37	-do-
	-do-		
-do-	-do-	38	-do-
	Satial		
-do-	-do-	39	-do-
	Patti		
1973-74	Haryana	40	Range Resi.
	Haryana		
-do-	-do-	41	Range Office
	-do-		
1974-75	-do-	42	F.G. Hut
	-do-		
1977-78	-do-	43	Forestor Quarter
	Manhota		
-do-	-do-	44	Class-IV Quarter
	Haryana		
-do-	-do-	45	F.G. Hut
	-do-		
-do-	Mehngrowal	46	F.R.H
	Meg.		
1956-57	Hoshiarpur	47	F.G. Hut
	Chohal		
1978-79	-do-	48	Forestor Quarter
	-do-		
1984-85	-do-	49	Range Resi.
	Hoshiarpur		
-do-	-do-	50	Forestor Quarter
	-do-		
-do-	-do-	51	Class-IV Quarter
	-do-		
1985-86	-do-	52	-do-
	-do-		

Period Location	Name of Range	Sr No	Name of Building
1945-46 To	Mehngrowal Meg.	53	Inspection Hut
1947-48	-do-	54	F.G. Hut
1971-72	-do- Patiori	55	-do-
1972-73	-do- Meg.	56	Forestor Quarter
1983-84	-do-	57	Range Quaretr
-do-	-do-	58	Forestor Quarter
-do-	-do-	59	Class-IV Quarter
1984-85	-do-	60	Range Officer Quarter
1985-86	-do-	61	Class-IV Quarter
1972-73	Dholbaha Dehrian	62	Resin Shed
1945-46	-do- Manhota	63	F.G. Hut
1981-82	-do- Dholbaha	64	Range Quarter
-do-	-do-	65	-do-
-do-	-do-	66	Forestor Quarter
-do-	-do-	67	F.G. Hut
-do-	-do-	68	Class-IV Quarter
1982-83	-do-	69	-do-
-do-	-do-	70	F.G. Hut
-do-	-do-	71	F.R.H.
1983-84	-do-	72	Forestor Quarter
-do-	-do-	73	F.G. Hut

Period Location	Name of Range	Sr No	Name of Building
1984-85	-do-	74	Forestor Quarter
1988-89	Hoshiarpur Hoshiarpur	75	Dy. DFO Resi.
1989-90	-do-	76	F.G. Hut
1990-91	Jahankhelan Haryana	77	F.G. Quarter
-do-	Bari Khad Hoshiarpur	78	Class-IV Quarter
-do-	Baddi Jana -do-	79	-do-
-do-	Hoshiarpur -do-	80	Inspection Hut
2000-01	-do-	81	Check Post
-do-	Jahankhelan -do-	82	Check Post
-do-	Nari -do-	83	Check Post
-do-	Chak Sadhu -do-	84	Tractor Shed
-do-	Hoshiarpur -do-	85	-do-
-do-	-do-	86	Gerrage
-do-	-do-	86	Pump House
-do-	Jahankhelan -do-	87	-do-
-do-	Satial Nsy. -do-	88	Seed Srore
-do-	Hoshiarpur -do-	89	-do-
-do-	-do-	90	Clerk Quarter
-do-	Bassi Jana Haryana	91	Check Post
-do-	Mastiwal Mehngrowal	92	-do-
-do-	Meg. Dholbaha	93	-do-
-do-	Dehrian -do-	94	-do-
-do-	Baroohi		

Period Location	Name of Range	Sr No	Name of Building
2000-01	Baroohi -do-	95	-do-
-do-	Dholbaha Hoshiarpur	96	Van Chetna Kendra
-do-	Hoshiarpur -do- -do-	97	Range Resi.

List of existing buildings in Dasuya Forest Division

Period	Name of Range	Sr. No.	Name of Building	Location
1999-2000	Dasuya	1	Seed Store	Usmaan Shaheed
1999-2000	-//-	2	-//-	-//-
1999-2000	-//-	3	Garrage	-//-
1999-2000	-//-	4	-//-	-//-
1999-2000	-//-	5	Pump house	Kathana Nursery
1999-2000	; -//-	6	-//-	Tanda Nursery
1999-2000	-//-	7	Tractor Shed	Usman Shaheed
1999-2000	Talwara-II	8	Store	Sandhpur
1999-2000	-//-	9	Range Residence	-//-
1999-2000	-//-	10	Seed Store	-//-
1999-2000	Badla	11	Pump House	Sagran Nursery
1999-2000	Talwara-I	12	Tractor Shed	Sandhpur
1999-2000	Mukerian	13	Range Residence	Mukerian
2000-01	Dasuya	14	Cleark Quarter	Usman Shaheed
2000-01	-//-	15	-//-	-//-
2000-01	-//-	16	-//-	-//-
2001-02	Mukerian	17	SCA Residence	Mukerian
2002-03	Dasuya	18	Garrage	Usman Shaheed
2003-04	-//-	19	Pump House	-//-

List of Rest Houses

Division wise detail of rest house is as under: -

Sr. No.	Division	Location of rest house
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1	Hoshiarpur	Dholbaha, Chohal, Nara, Bassi Jana and Mehngrowal.
2	Garhshankar.	Jaijon and Kokowal Mazari.
3	Dasuya.	Dasuya and Talwara.

17.4 Maintenance of boundaries and pillars:

Boundary pillars of strip forests will be got erected & repaired with a close coordination among the different departments of PWD (B&R), Canal, drainage, Railways & Forests.

There has been programme of monitoring/checking of boundaries and their maintenance. Boundary registers for most of the forest ranges are being maintained. It is suggested that all the block forests should be demarcated in a time bound manner with simultaneous fixing of masonry boundary pillars and preparations of records. Land plans of the strips prepared by the respective Departments may be obtained at the earliest. The records be prepared in triplicate and kept in Range, Division and Circle Offices. In case of strip forests, the respective departments are to maintain the boundary pillars and the condition is satisfactory. To avoid legal disputes in the future, demarcation and maintenance of boundary pillars is necessary especially in the un-classed block forests. The demarcation of Block Forests by 1 mt, X 1 mt. Ditch and a multipurpose inspection path of 3 meter width all along the boundary with a particular variety of tree species on the outer side besides boundary pillars should be considered in plain block forests. The consolidation of the boundaries and mapping of the Block Forest may be carried out with the help of GIS & GPS techniques in a time bound manner. As per government of India guidelines, boundaries of all government forests are to be digitized as early as possible. Work in this direction has already been started.

All these areas, after demarcation should be permanently created with barbed wire or thorny hedges. The pillars must be numbered and written. The distantly located pillars may be connected to one another by digging lines, which should be cleared.

The Range Forest Officer should check the boundaries once a year and record a certificate to that effect on the Boundary Register. The Block Officer should check the entire boundaries of his block once a year and send the necessary report to the range Forest Officer. The Beat Guards should keep the records of boundaries of their beats in the Beat Book.

17.5 Declaration of Protected Forests

Forest areas of all the three Forest Divisions of this Working Plan are still in the process of declaring them Protected Forests. Efforts should be made at the earliest to declare these forests as protected forests under the Indian Forests Act, 1927.

17.6 Fire Protection:

The forest areas, both Birs and Strip forests are prone to fire damage, as they are situated adjoining to the agricultural fields. The harvest refuse is burnt by the farmers sometimes resulting in forest fires in the adjoining forests. Therefore strict vigil during the harvesting season, both during rabi and Kharif crops is required.

There are about 40-50 fire watch towers in three forest divisions which are helpful in controlling forest fires.

The following measures are suggested for fire prevention:

1. The people who have their fields adjoining strip forests should be educated to burn the crop residue in such a way that it does not cause damage to the adjoining forest crop. This can be achieved by controlled burning.
2. The rank growth of kana and kahi should be disposed off by auctioning.
3. The compartment roads and internal boundary of compartments should be cleared of grasses and bushes.
4. Harrowing of interspace between the rows of trees should be done to check fire-hazard.
5. Fire-towers should be erected at suitable places.
6. Fire-watchers should be employed from March to June every year in the fire-season.
7. The territorial staff should maintain good relations with the local people to garner their support in case of fires and other eventualities.
8. The felling refuse should be burnt under strict supervision.

The Division Forest Officer should visit the fire-affected areas immediately after it comes to his knowledge and should submit a report to the Conservator of Forests giving all the details of occurrence of fire, cause of fire and damage occurred to the crop with remedial measures for the future.

17.7 Control of Grazing:

Areas that have to be taken up for plantation should be fenced with barbed wire well in advance. Strict enforcement of the penal provisions of the Indian Forest Act, 1927 and the Cattle Trespass Act, 1871 should be enforced and the rates of compensation should be revised from time to time.

17.8 Research Plots:

Forest Research Circle, Hoshiarpur has conducted various research trials in Block Forests Kharkan and Pandori Mindomind. At Kharkan therein an area of about 40 hectares various research trials pertaining to Germplasm Bank of about 17 species has been conducted. These seed orchards are of immense value in the field of forestry research. Similarly at Pandori Mindomind over an area of about 10 hectares various research trials of Drek, Eucalyptus and Shisham have been conducted.

17.9 Nurseries:

There are 11 nurseries in Garhshankar Forest Division, 15 Hoshiarpur Forest Division and 15 Dasuya Forest Division and these are strategically located in order to cater of planting in forest areas and to meet the demands of farm forestry. Since nursery stock forms the backbone of success of forest plantations, these should be given prime importance and they should be well protected from the menace of wildlife and other biotic pressures and properly fenced.

Table 17.9: List of Nurseries

(A) List of Nurseries & their location in Garhshankar Forest Division

Sr No	Name of Nursery	Location	Area (in ha)
1	Fatehpur	Range H.O. Kathgarh	1.25 Hect.
2	Taunsa	Taunsa	0.05 Hect.
3	Balachaur	Balachaur R.O.H.Q	0.50 Hect.
4	Rakkran	Rakkran	0.40 Hect.
5	Garhshankar	Garhshankar R.O.H.Q Km 48-49 L/s of Nawanshahar-Jaijjon Rly. Line	0.30 Hect.
6	Sadhowal	Sadhowal P.F	1.20 Hect.
7	Shahpur	Garhshankar Road Km 4-5/ L side	2.00 Hect.
8	Bachhoi	Bachhoi	0.75 Hect.
9	Parsota	Parsota	0.5 Hect.
10	Kangar	Kangar	0.3 Hect.
11	Chandiani Kalan	Chandiani Kalan	0.4 Hect.

Table 17.9: List of Nurseries**(B) List of Nurseries & their location in Hoshiarpur Forest Division**

Sr No	Name of Nursery	Location	Area (in ha)
1	Bassi Jana	Proper	0.40
2	C.R.H.Nursery	Hoshiarpur Division Office	0.15
3	Jahan Khelan	Proper	1.00
4	Satial	Proper	3.00
5	Chohal	Proper	0.40
6	Mehangrowal	Proper	1.00
7	Takhni	Along Choe Near R.H.	1.00
8	Janauri	Proper	0.20
9	Musa	Musa Forest	0.75
10	Bassi Babu Khan	Proper	1.00
11	Dehrian	Dehrian Forest	0.2
12	Dholbaha	Proper	0.4
13	Barikhad	Proper	0.2
14	Katohar	Proper	1.00
15	Bhatoli	Proper	0.2

Table 17.9: List of Nurseries**(C) List of Nurseries & their location in Dasuya Forest Division**

Sr. No.	Name of Range	Name of Nursery	Area of Nursery (In Ha.)
1	Dasuya	Dasuya	0.75
2	-//-	Keharwali	1
3	Mukerian	Mukerian	1
4	Badla	Sagran	1
5	-//-	Dadial	0.40
6	Talwara-I	Hajipur	1.50
7	-//-	Chattarpur	0.35
8	Talwara-II	Talwara-ITI	1
9	-//-	Shri Pandiyan Nsy	0.15

Almost all the nurseries are run and maintained following the old, traditional methods. In order to increase the quality of the seedling and to minimize the cost, better and modern technologies like construction of green-house and shade-house, use of root-trainers in place of the age-old polythene bags, provision of micro-water sprinklers etc. should be made. Production

through vegetative methods like cuttings and cloning may be used to multiply the available good stock to required numbers.

As per recommendations of the earlier working plan, "Plus Trees" for collection of certified seeds have been identified and duly marked in different parts of the Division. The record about the selection and maintenance of plus trees needs to be maintained properly in the Divisional Office. Only seeds selected from such identified sources should be for plantation programmes.

17.10 Problematic Areas:

The saline-alkaline patches will be treated with Gypsum before taking up plantations and the waterlogged area will be treated by constructing ridges/mounds of earth and planting suitable species like Arjun, Willow, Jamun etc.

17.11 Establishment of a Cell for removal of encroachments:

A committee under the Charimanship of the Conservator has been constituted for removal of the encroachments. Deputy Commissioner, Senior Superintendent of Police, Divisional Forest Officer are the members of the committee.

17.12 Biodiversity Conservation:

As per the guidelines of the National Forest Policy 1988 and the objectives of the Biodiversity Convention, 1991 signed at Rio de Janeiro, emphasis should be laid on planting a mixture of indigenous species rather than concentrating of monocultures.

17.13 Monitoring & Evaluation:

Although there will be no review of the Working Plan but the results of plantation, silvicultural prescriptions and other treatments will be monitored and evaluated yearly preferably by a separate unit set up for the purpose, The corrective measures will be taken, if need be, on the basis of the results of the study.

17.14 Petty Sales:

Dry and fallen trees may be disposed off as early as possible to avoid financial loss. Grasses (Sarkanda) and fruit auction will be held in time so that they are in good conditions and attractive to the contractors and fetch good price.

17.15 Beat Books:

Each beat guard should maintain a Beat-Book to be prepared and issued by the Divisional Office. The Beat Book shall contain the following information:

1. Map of the Bir/Strip forests in his beat.
2. Details about the area like length, width, area, boundaries, H.B.Nos. etc.
3. Copy of Boundary Registers of Bir Forests.
4. Duties of Beat Forest Guard.
5. Legal Status of the forest area with Government notification.
6. Abstract copy of the relevant sections of the Indian Forest Act, 1927, Wild Life Protection Act, 1972, Forest (Conservation) Act, 1980 and Vernacular translations thereof.
7. List of buildings, roads, paths, fire lines etc in the Bir/Strip forest of his beat.
8. Details of plantations raised during the last 10 years.

CHAPTER XVIII

Maintenance of Records for Control

18.1 Records:

A detailed record of each forestry activity shall be maintained in order to have a solid database for scientific monitoring, evaluation and future planning. In order to avoid any complicity at any level, the controlling officers should inspect the following documents while touring:

1. Annual Plan of Operations.
2. Plantation Journals,
3. Forest journals.
4. Nursery Registers.
5. Divisional Note-Book
6. Control Forms
7. Fires Control Forms.
8. Deviation Statement.

18.1.1 Annual Plan of Operations:

Annual Plan of Operations should be prepared by the Divisional Forest Officer in advance and works executed according to the approved plan.

18.1.2 Plantation Journals:

For each plantation, a separate journal shall be maintained in prescribed form, wherein a complete record of plantation viz year of plantation, area under plantation, number of plants, species planted, details of expenditure incurred month wise, compartment-wise/strip-wise/locality-wise etc. should be given. It will also, later on, include the maintenance cost for subsequent three years. At the end of each year observations regarding success of the plantation, growth figures etc. shall be recorded in the journals. Instructions of the Principal Chief Conservator of Forests, Punjab, regarding checking of plantations issued from time to time, should also be followed.

18.1.3 Forest Journals:

The Forest Journals are the most important record of the history of the forests . They should be maintained in the prescribed performa for each forest separately. All forestry activities such as regeneration, felling and enumeration, maintenance cost, weed cutting, constructing of fire-lines etc. should be recorded for a year. For each year, there will be one entry that should be signed by the Forest Range Officer. The inspection notes by the officers should be filled in the

journals. The Divisional Forest Officer should inspect the entries at the time of annual office inspection.

18.1.4 Nursery Registers:

For each nursery, a separate register shall be maintained. It shall have monthly detail of operations and expenditure incurred, plants raised, plants used departmentally, plants supplied to the public during the month etc. Detail of plants supplied free of cost to other Government, departments, public institutions etc. shall also be recorded in the register. Plants destroyed as a result of natural calamities or otherwise shall be got written off from the competent authority. A copy of the nursery register showing details of species wise nursery stock should be sent to the Divisional Office monthly.

18.1.5 Divisional Note-Book:

The Divisional Forest Officer should maintain a note-book in which the following information should be recorded:

1. Flowering and seeding of important tree species.
2. Climate-rainfall and temperature experienced during the year and its effect on the forest crop.
3. Pests and diseases noticed on the forest crop, the treatment and result thereof.
4. Growth data of trees collected during the year.
5. Problems regarding labour.
6. Any other matter important from the forest management point of view.

18.1.6 Control Forms:

The following standard control forms prescribed by the P.C.C.F. Punjab should be maintain :

- i. Form 2 (a) : For the control of Yield in a Working Circle.
- ii. Form 3 : For the control of regeneration operations, and
- iii. Form 4 : For the control of other miscellaneous operations.

These forms shall be maintained and submitted to the Conservator of Forests as per instructions of the Government.

18.1.7 Fire Control Forms:

The record of forest fires should be maintained in the prescribed proformas. The details of area burnt with sketch, cause of fire, date of fire, damage, date of time of control, damage and the appropriate financial loss will be recorded. The information should be correct and up-to-date.

18.1.8 Deviation Statement:

No deviation should be done without the prior approval of the competent authority. To exercise control over progress of various operations at the end of each financial year, the prescription of the Working Plan will be compared with the progress of felling, regeneration or other miscellaneous works and any excess or shortfall will be recorded, giving reasons for deviation and sanction of the competent authority be given.

18.1.9 Maps:

This working plan covers three territorial divisions, Hoshiarpur, Garhshankar and Dasuya. Maps of these three divisions and some maps of ranges of these divisions have been annexed as Annexures-XIV, XV, XVI, XVII and XVIII.