

PREPARATION OF ZONAL MASTER PLANS FOR ECO SENSITIVE ZONES: SATPURA NATIONAL PARK AND PACHMARHI & BORI WILDLIFE SANCTUARY



PART :3 - ANNEXURES



**Madhya Pradesh
Tourism Board, Bhopal**



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IDENTIFICATION TABLE

Client/Project owner	Madhya Pradesh Tourism Board, Bhopal
Project	PREPARATION OF ZONAL MASTER PLANS FOR ECO SENSITIVE ZONES: SATPURA NATIONAL PARK AND PACHMARHI & BORI WILDLIFE SANCTUARY
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Annexure 1.1 : List of Notified Villages

S.No	Name of Villages	District	Longitude	Latitude
1	Maharajgang	Hoshangabad	78.46429	22.71103
2	Nayagaon	Hoshangabad	78.43874	22.71579
3	Ghogri matha	Hoshangabad	78.4425	22.70425
4	Amadeh	Hoshangabad	78.43636	22.67732
5	Raitwadi	Hoshangabad	78.42187	22.68221
6	Madho	Hoshangabad	78.40464	22.67686
7	Bori	Hoshangabad	78.40213	22.68853
8	Devi	Hoshangabad	78.40429	22.66339
9	Dokrikheda	Hoshangabad	78.37633	22.65786
10	Jhiria	Hoshangabad	78.39358	22.64529
11	Choka	Hoshangabad	78.37167	22.64446
12	Aanhoani	Hoshangabad	78.35181	22.63494
13	Muharikhurd	Hoshangabad	78.33859	22.64513
14	Muharikala	Hoshangabad	78.30226	22.66343
15	Sanghii	Hoshangabad	78.28484	22.66993
16	Sehra	Hoshangabad	78.16963	22.5831
17	Kamti	Hoshangabad	78.15882	22.60744
18	Tekapar	Hoshangabad	78.15037	22.58358
19	Sarangpur	Hoshangabad	78.14555	22.57775
20	Ghogri	Hoshangabad	78.12046	22.58567
21	Mangaria	Hoshangabad	78.10279	22.59454
22	Urdaon	Hoshangabad	78.09624	22.57956
23	Kharpawad	Hoshangabad	78.07262	22.57528
24	Pathai	Hoshangabad	78.03309	22.60285
25	Tawanagar	Hoshangabad	77.97639	22.56691
26	Ranipur	Hoshangabad	77.95484	22.56772
27	Chicha	Hoshangabad	77.91397	22.54456
28	Daudi	Hoshangabad	77.89123	22.52201
29	Chatua	Hoshangabad	77.90593	22.46937
30	Jhunkar	Hoshangabad	77.90672	22.42959
31	Mallupura	Hoshangabad	77.93471	22.42481
32	Suplai	Hoshangabad	77.98173	22.41801
33	Khamda	Hoshangabad	77.93293	22.40847
34	Jhalai	Hoshangabad	77.94843	22.39073
35	Kotmi	Hoshangabad	77.90457	22.40127
36	Maruapura	Hoshangabad	77.89348	22.37951
37	Chichadhana	Hoshangabad	77.89974	22.37151

S.No	Name of Villages	District	Longitude	Latitude
38	Ladema	Hoshangabad	77.8942	22.37073
39	Bardha	Hoshangabad	77.91484	22.33553
40	Dhasaii	Betul	77.9483	22.32502
41	Kelipunji	Betul	77.99334	22.30717
42	Bhatodi	Betul	78.19238	22.38626
43	Baruth	Chhindwara	78.29046	22.40346
44	Dundalum	Chhindwara	78.28078	22.38458
45	Chhatiaam	Chhindwara	78.31345	22.3877
46	Kurrai	Chhindwara	78.34644	22.41302
47	Alimod	Chhindwara	78.37416	22.39472
48	Bijori	Chhindwara	78.4486	22.37362
49	Sangakheda	Chhindwara	78.45733	22.36393
50	Kundaidhana	Chhindwara	78.47338	22.36198
51	Nishan	Chhindwara	78.53165	22.40401
52	Umardole	Chhindwara	78.54858	22.3972
53	Belkhedi	Chhindwara	78.56243	22.41129
54	Lukkhadhana	Chhindwara	78.57616	22.41081
55	Anjandhana	Chhindwara	78.57781	22.42217
56	Bandhan	Chhindwara	78.5465	22.51054
57	Dundi	Chhindwara	78.5416	22.50832
58	Aaditoria	Chhindwara	78.51853	22.57712
59	Jhirpa	Chhindwara	78.51465	22.59659
60	Khanchari	Chhindwara	78.50298	22.59473
61	Navatola	Chhindwara	78.50639	22.59775
62	Karer	Chhindwara	78.50785	22.60683
63	Nandia	Hoshangabad	78.44322	22.3908
64	Gutkheda	Hoshangabad	78.46377	22.3936
65	Supdongar	Hoshangabad	78.48375	22.39471
66	Sakri	Hoshangabad	78.50124	22.40709
67	Churni	Hoshangabad	78.54235	22.42417
68	Neksa	Hoshangabad	78.51321	22.57276
69	Matkuli	Hoshangabad	78.45486	22.59284
70	Chhirrai	Hoshangabad	78.47814	22.59286
71	Tekapar	Hoshangabad	78.48304	22.60619
72	Chillod	Hoshangabad	78.45909	22.60774
73	Khari	Hoshangabad	78.44981	22.61203
74	Mohagaun	Hoshangabad	78.4489	22.60754
75	Malli	Hoshangabad	78.43623	22.59764
76	Pisua	Hoshangabad	78.40352	22.59627

S.No	Name of Villages	District	Longitude	Latitude
77	Bindakheda	Hoshangabad	78.41941	22.58834
78	Mehandikheda	Hoshangabad	78.43892	22.58256
79	Pachmarhi	Hoshangabad	78.42086	22.45545
80	Fiferi	Hoshangabad	78.53644	22.51033
81	Manakachar	Hoshangabad	78.5295	22.55292

Annexure 1.2 : Village Survey Form

Village Survey										
A ADMINISTRATIVE DATA										
1	Name of Village/ Cluster/Block									
2	Geographical Area (Hectares)									
3	No. of Villages under GP cluster									
4	Name of the block head quarter									
5	Name of Tehsildar contact number									
6	Distance of BHC to the largest settlement nearby									
7	GIS coordinates									
B HYDROLOGY										
1	Surface water bodies (River, Lakes, etc.)									
2	Rivers (name, length, catchment area and River Basins) (Watershed Map)									
		River								
		Lakes								
		Streams								
		Nallah								
3	Ground water									
	Pre-monsoon (MBGL)									
	Post-monsoon (MBGL)									
C DISASTER OCCURRENCE & DISASTER MANAGEMENT PLAN (In last 5 years)										
	Flood									
	Drought									
	Cyclone									
	Earthquake									
	Heat wave									
E DEMOGRAPHICS (last 3 to 5 decade)										
			1981		1991		2001		2011	
			Male	Female	Male	Female	Male	Female	Male	Female
1	Total population									
2	Total Literacy									
	Gender Wise Literacy									
3	Population Density									
4	SC population/ sex wise									
5	ST population/ sex wise									
6	Literacy M/F/SC/ST									
	SC									
	ST									
7	Worker Profile (Farm and non-farm workforce)									
	Agriculture Worker									
	Non-Agriculture worker									
8	Work profile male/ female									
	Main worker									
	Marginal worker									
	Non-worker									
9	Occupation Structure									
10	Average distance travel to workplace by majority work force									
11	BPL families (caste wise)									
	Total									
	SC									
	ST									
12	Skilled/unskilled labour									
	Skilled labour									
	Unskilled labour									
13	Religion (% of population under each religion)									
	Hindu									
	Muslims									
	Christian									

F	CULTURAL PROFILE OF THE VILLAGE	
1	Languages Spoken	
2	Religion (% of population under each religion)	
3	Type of Tribes	
4	Pilgrimage Centres	
5	Tourist Centres	
6	Monuments/Places of Heritage	
7	Fairs/festivals	
8	Sports activity	
9	Music /dance	
10	Art forms	
11	No. of Hotels/restaurants / Dhabas in villag area	
12	Camping Site/Eco tourism Site nearby	
13	No. of tourists appeared in a year (season wise)	
G	HOUSEHOLD AMENITIES ASSETS	
1	No. of household	
2	Housing Condition	
		Good
		Lveable
		Dilapidated
4	Types of Houses	
		Pakka
		Semi Pakka
		Kachha
		Houseless Families
	ECONOMIC PROFILE	
H	AGRICULTURE LAND CLASSIFICATION	
1	Agricultural Land (Area)	
2	Cultivable Land	
3	Non-Cultivable Land	
4	Grazing	
5	Credit Societies - Agriculture/non-Agriculture	
6	Net Area Sown	
7	Agri processing/ warehouses/ storage facility	
8	Agriculture produce (Season wise)	
		First commoditise
		Second commoditise
		Third commoditise
I	IRRIGATION SYSTEM	
1	Irrigated Land	
2	Non-Irrigated Land	
3	Forest land	
4	Fertile land (%)	
5	Non-fertile land (%)	
6	Productivity of Crops (hectare)	
7	Types & Use of Fertilizer (Bio/Chemical)	
8	Type of Irrigation	
		Drip
		Sprinkler
		Other
9	Source of Irrigation	
10	Rivers, major-minor dams, Canal type and coverage	

11	Marginal/Small/Semi-medium/Medium/Large Farmers										
	Marginal farmer (<6 Bigha.)										
	Small farmer (6 to 12 Bigha.)										
	Semi medium (12.35 to 24 Bigha)										
	Medium (24 to 61 Bigha)										
	Large farmer (>61 Bigha)										
	Landless farmer										
J	HORTICULTURE										
	Fruit										
	Flower										
	Vegetable										
	Spices										
	Other										
K	LIVESTOCK DETAILS (COW/ BUFFALO/ GOAT/SHEEP) (last 3 to 5 years)	2011	2012	2013	2014	2015	2016	2017	2018		
	No. of cow										
	No. of buffalo										
	No. of goat										
	No. of sheep										
	Other Animals										
	1 Livestock-breed/health care										
	2 Animal disease										
	3 Dairy produce										
	4 Milk cooperative / collection centre										
L	FISHERIES										
	River										
	Lake										
	Area suitable for fisheries										
	No.										
	Area (Ha.)										
	Other Govt Schemes.										
M	INDUSTRIES										
	1 Available Minerals or other raw material										
	2 Industrial Areas (Industrial estate or Cooperative industrial area)										
	3 Micro, small, Medium or Large Industries										
	No. of units										
	Type of Industry										
	Location(Distance from Village)										
	4 Employment generated by Industry										
	Household Industries										
	Nearby Industries										
	Agro based Industry										
	Forest Based Industry										
	Tourism industry										
	5 Export Item										
	6 Govt. Schemes										
	7 Nearest APMC										
N	BANKING FACILITY										
	1 Banking facility										
	Name of town within										
	0 to 1km										
	1 to 5 kms										
	5 – 10 kms										
	More than 10 kms										

O	FOREST NEARBY		AREA
1	Types of forests & coverage		
		Protected Forest	
		Reserved Forest	
		Unclassified	
2	Forest Produce		
3	Forest produce which are exported		
4	Govt Schemes or programs for betterment or conservation of forest		
5	Wild animal Conflicts (With Location and Timeperiod)		
6	Social Forestry		
7	Poaching cases/ incidents		
SOCIAL INFRASTRUCTURE			
P	EDUCATION		
1	Education level		
		Primary - Secondary	
		Secondary - Higher secondary	
		Higher secondary - College	
2	No. of Schools- and its condition pre- primary/primary/secondary/higher secondary		
	Pre primary		
	Primary		
	Secondary		
	Higher secondary		
3	Nearby Colleges - Arts/Science/Medical/Engg. (Diploma & Degree) / (Management/ ITI/Vocational inst.		
	Arts		
	Commerce		
	ITI		
	Skill Development Centre		
	Vocational Institute		
4	Access to school - distance		
5	Separate toilet facilities for girls		
6	Adequate classrooms		
Q	HEALTH & NUTRITION	Availability	Distance
1	Availability of SHC, PHC, CHC, FPC nearby (With Distance)		
	Sub district hospital		
	Rural hospital		
	Primary health centres (PHCs)		
	Sub centres (SCs)		
	Community Health Centre (CHC)		
	Private Clinic		
	Veterinary hospitals		
2	Seasonal epidemics & rate of occurrence		
3	Mobile health units		
4	ASHA		

R	AMENITIES	AVAILABILITY	Distance (KM)
1	Community Centre		
2	Skill development centre/ regional training centre/ meeting halls		
3	Local handicrafts and handlooms		
4	Post Office		
5	Police Chokry		
6	Banks-commercial/co-operative		
7	Credit Societies - Agriculture/non-Agriculture		
8	Fair Price Shop		
9	Rural godown		
10	Markets/Hat bazar/ weekly market		
11	Women Welfare Centre		
12	Milk booth		
13	Crematorium		
14	Burial ground		
15	Panchayat house		
16	Bus pickup stand		
17	Havado (drinking water facility for animals)		
18	Citizen service centre		
19	Self Help Group		
PHYSICAL INFRASTRUCTURE			
S	WATER SUPPLY		
1	Sources of drinking water		
2	Sources of water supply		
	Piped Water supply		
	Stand post		
	Well		
	Hand pump		
3	Quantity of water supplied		
4	Rainwater harvesting		
5	No. of Over Head Tank & Its capacity		
6	No. of tap connection		
7	Sanitation		
	H.H.level Toilet		
	Public Toilet		
	Open Defecation		
	Septic tank Availability		
T	SOLID WASTE TREATMENT		
	Roads without open drain		
	Present O&M		
	Door to door solid waste collection (Village & Cluster)		
	Landfill site/Ukarda (Yes/No)		
	Government Scheme		
U	ELECTRICITY AND STREET LIGHT		
1	Sources of electricity		
	Electricity		
	Kerosene		
	Solar		
	Other		
2	Use of Non-conventional sources of electricity like Solar, Gobar gas plant, etc.,		
3	Streetlight		
	No of poles		
	Conditions		
4	Roads covered with streetlight		
5	Roads not covered with Street light		

V	ROAD AND TRANSPORTATION	
1	Condition of roads & Approx. Width of road	
	Kachha road	
	Pacca road Asphalt	
	Pacca road RCC	
	WBM roads	
	Inter village connectivity within cluster by road	
3	Connectivity by Public transport	
	No of routes	
	No of buses	
4	Connectivity by Para- transit mode transport	
	Three-wheeler	
	Four-wheeler	
5	Vehicular ownership	
	Two-wheeler	
	Three-wheeler (Rikshaw)	
	Four-wheeler	
	Heavy vehicles	
W	COMMUNICATION	
1	Available mode of communication	
	Post office	
	Telephone facility	
	Computer Facility	
	Mobile	
	Internet facility	
	E gram connectivity	
	No. facility	
X	LPG/PNG GAS CONNECTIONS (No of Households)	
Y	LIST OF GOVERNMENT GRANTS AND SCHEMES	
1	List of NGO's	

Annexure 2.1 : Monitoring Points Water Quality Samples of MPPCB

River Denwa

GEMS - Global Environment Monitoring System																						
MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2013-2014																						
Natural Water Resource : River Denwa.																	Lying in category A					
Description of Sampling Station : Near Pachmari Road Bridge. Cat.-																	b					
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		28.4.13	-	-	30.7.13	-	-	18.10.13	-	19.12.13	-	-	-	-	-	-					
2	Appearance	Sl.Turbid	-	-	-	Turbid	-	-	-	-	Sl.Turbid	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
4	Turbidity	NTU	15	-	-	8	-	-	16	-	2	-	-	-	10.25	16	2					
5	Colour	PCS	CL	-	-	Muddy	-	-	-	-	CL	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTIONABLE			
7	pH	pH Unit	8.12	-	-	7.95	-	-	8.22	-	8.12	-	-	-	8.1025	8.22	7.95	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	258	-	-	282	-	-	401	-	210	-	-	-	287.75	401	210					
9	T. Solids	mg/1	207	-	-	280	-	-	308	-	170	-	-	-	241.25	308	170					
10	D. Solids	mg/1	160	-	-	254	-	-	260	-	156	-	-	-	207.5	260	156	500		1500		2100
11	S. Solids	mg/1	47	-	-	26	-	-	48	-	14	-	-	-	33.75	48	14					
12	Amm. Nitrogen	mg/1	0.015	-	-	0.125	-	-	0.025	-	0.27	-	-	-	0.1088	0.27	0.015					
13	Nitrite Nitrogen	mg/1	0.02	-	-	0.045	-	-	0.125	-	-	-	-	-	0.0633	0.125	0.02					
14	Nitrate Nitrogen	mg/1	0.85	-	-	5.25	-	-	4.15	-	0.8	-	-	-	2.7625	5.25	0.8	20		50		
15	Phosphate (PO ₄)	mg/1	0.033	-	-	0.66	-	-	0.033	-	2.9	-	-	-	0.9065	2.9	0.033					
16	Chloride	mg/1	17.61	-	-	7.65	-	-	23.141	-	12.7	-	-	-	15.275	23.141	7.65	250		600		600
17	Sulphate (SO ₄)	mg/1	11.75	-	-	25	-	-	20.5	-	4	-	-	-	15.313	25	4	400		400		1000
18	T. Alkalinity	mg/1	126	-	-	100	-	-	196	-	104	-	-	-	131.5	196	100					
19	T. Hardness	mg/1	86	-	-	96	-	-	180	-	120	-	-	-	120.5	180	86	300				
20	CalciumHardness	mg/1	70	-	-	60	-	-	118	-	102	-	-	-	87.5	118	60	200				
21	Magnesium H.	mg/1	16	-	-	36	-	-	62	-	18	-	-	-	33	62	16	100				
22	D. Oxygen	mg/1	5.5	-	-	6.4	-	-	6.2	-	9.3	-	-	-	6.85	9.3	5.5	6	5	4	4	
23	B.O.D.	mg/1	1.6	-	-	1	-	-	1.7	-	2.6	-	-	-	1.725	2.6	1	2	3	4		
24	C.O.D.	mg/1	19.76	-	-	-	-	-	19.6	-	9.6	-	-	-	16.32	19.76	9.6					
25	Sodium	mg/1	-	-	-	-	-	-	58.16	-	9.55	-	-	-	33.855	58.16	9.55					
26	Potassium	mg/1	-	-	-	-	-	-	7.64	-	3.39	-	-	-	5.52	7.64	3.39					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	110	-	-	-	-	-	110	110	110	50+	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Cat.																						

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																																	
Water Quality during Year - 2014-2015																	Lying in category A																
Natural Water Resource : River Denwa.																																	
Description of Sampling Station : Near Pachmarhi Road Bridge. Cat. -																																	
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E											
1	Date of Sampling		-	-	-	-	-	-	-	29.11.14	-	-	-	-	-	-	-																
2	Appearance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																
3	Temperature	oC	-	-	-	-	-	-	-	28	-	-	-	-	-	-	-																
4	Turbidity	NTU	-	-	-	-	-	-	-	2	-	-	-	-	2	2	2																
5	Colour	PCS	-	-	-	-	-	-	-	CL	-	-	-	-	-	-	-	10	300	300													
6	Odour	T. No	-	-	-	-	-	-	-	OL	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE														
7	pH	pH Unit	-	-	-	-	-	-	-	7.57	-	-	-	-	7.57	7.57	7.57	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5											
8	Sp. Conductivity	µMhos/cm.	-	-	-	-	-	-	-	128	-	-	-	-	128	128	128																
9	T. Solids	mg/1	-	-	-	-	-	-	-	112	-	-	-	-	112	112	112																
10	D. Solids	mg/1	-	-	-	-	-	-	-	16	-	-	-	-	16	16	16	500		1500		2100											
11	S. Solids	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!																			
12	Amm. Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!																			
13	Nitrite Nitrogen	mg/1	-	-	-	-	-	-	-	2	-	-	-	2	2	2																	
14	Nitrate Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!			20		50														
15	Phosphate (PO ₄)	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!																			
16	Chloride	mg/1	-	-	-	-	-	-	-	7.88	-	-	-	7.88	7.88	7.88	250		600		600												
17	Sulphate (SO ₄)	mg/1	-	-	-	-	-	-	-	5.5	-	-	-	5.5	5.5	5.5	400		400		1000												
18	T. Alkalinity	mg/1	-	-	-	-	-	-	-	98	-	-	-	98	98	98																	
19	T. Hardness	mg/1	-	-	-	-	-	-	-	106	-	-	-	106	106	106	300																
20	CalciumHardness	mg/1	-	-	-	-	-	-	-	84	-	-	-	84	84	84	200																
21	Magnesium H.	mg/1	-	-	-	-	-	-	-	22	-	-	-	22	22	22	100																
22	D. Oxygen	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!			6	5	4	4													
23	B.O.D.	mg/1	-	-	-	-	-	-	-	0.7	-	-	-	0.7	0.7	0.7	2	3	4														
24	C.O.D.	mg/1	-	-	-	-	-	-	-	9.4	-	-	-	9.4	9.4	9.4																	
25	Sodium	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!																			
26	Potassium	mg/1	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!																			
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!			50+	500	5000														
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!																			
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																							
Water Quality during Year - 2015-2016																							
Natural Water Resource : River Denwa.												Lying in category A											
Description of Sampling Station : Near Pachmari Road Bridge. Cat.-																							
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E	
1	Date of Sampling						30.08.15					03.01.16			-	-	-						
2	Appearance						-					S. turbid			-	-	-						
3	Temperature	oC					-								-	-	-						
4	Turbidity	NTU					50.2					0.72			25.46	50.2	0.72						
5	Colour	PCS					Sl. Muddy								-	-	-	10	300	300			
6	Odour	T. No					-					OL			-	-	-	Unobjectionable	UNOBJECTI ONABLE				
7	pH	pH Unit					8.2					8.19			8.195	8.2	8.19	6.5 to 8.5			6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.					202					210			206	210	202						
9	T. Solids	mg/1					192					151			171.5	192	151						
10	D. Solids	mg/1					148					144			146	148	144	500			1500		2100
11	S. Solids	mg/1					44					7			25.5	44	7						
12	Amm. Nitrogen	mg/1					0.826					0.018			0.422	0.826	0.018						
13	Nitrite Nitrogen	mg/1					0.068					BDL			0.068	0.068	0.068						
14	Nitrate Nitrogen	mg/1					2.026					0.432			1.229	2.026	0.432	20			50		
15	Phosphate (PO ₄)	mg/1					BDL					0.068											
16	Chloride	mg/1					26					19.56			22.78	26	19.56	250			600		600
17	Sulphate (SO ₄)	mg/1					14.08					2.14			8.11	14.08	2.14	400			400		1000
18	T. Alkalinity	mg/1					86					100			93	100	86						
19	T. Hardness	mg/1					140					68			104	140	68	300					
20	CalciumHardness	mg/1					80					56			68	80	56	200					
21	Magnesium H.	mg/1					60					12			36	60	12	100					
22	D. Oxygen	mg/1					6.8					6.6			6.7	6.8	6.6	6	5	4	4		
23	B.O.D.	mg/1					1.8					1			1.4	1.8	1	2	3	4			
24	C.O.D.	mg/1					12					5			8.50	12	5						
25	Sodium	mg/1					22.4					12			17.2	22.4	12						
26	Potassium	mg/1					1.2					0.8			1	1.2	0.8						
28	F. Coliform	MPN/100ml					-											50+	500	5000			
29	T.K.N.	mg/1					-								-	-	-						
Cat.							A					A			A								

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2016-2017																						
Natural Water Resource : River Denwa.															Lying in category A							
Description of Sampling Station : Near Pachmarhi Road Bridge. Cat. -																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		Dry	-	-	-	24.08.16	-	-	-	-		-	-	-	-	-					
2	Appearance																					
3	Temperature	oC																				
4	Turbidity	NTU					10								10.00	10.0	10.0					
5	Colour	PCS					-								-	-	-	10				
6	Odour	T. No					-								-	-	-	Unobjectionable				
7	pH	pH Unit					8.27								8.27	8.3	8.3	6.5 to 8.5				
8	Sp. Conductivity	µMhos/cm.					286								286.00	286.0	286.0					
9	T. Solids	mg/1					226								226.00	226.0	226.0					
10	D. Solids	mg/1					214								214.00	214.0	214.0	500				
11	S. Solids	mg/1					12								12.00	12.0	12.0					
12	Amm. Nitrogen	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!	20				
15	Phosphate (PO ₄)	mg/1					-															
16	Chloride	mg/1					31.53								31.53	31.5	31.5	250				
17	Sulphate (SO ₄)	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!	400				
18	T. Alkalinity	mg/1					158								158.00	158.0	158.0					
19	T. Hardness	mg/1					148								148.00	148.0	148.0	300				
20	CalciumHardness	mg/1					114								114.00	114.0	114.0	200				
21	Magnesium H.	mg/1					34								34.00	34.0	34.0	100				
22	D. Oxygen	mg/1					7.8								7.80	7.8	7.8	6				
23	B.O.D.	mg/1					1.9								1.90	1.9	1.9	2				
24	C.O.D.	mg/1					20								20.00	20.0	20.0					
25	Sodium	mg/1					13.4								13.40	13.4	13.4					
26	Potassium	mg/1					1.02								1.02	1.0	1.0					
27	T. Coliform	MPN/100ml					-											50+				
28	F. Coliform	MPN/100ml					-															
29	T.K.N.	mg/1													-	-	-					
Cat.							A								A							

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2017-2018

Natural Water Resource : River Denwa.

Lying in category A

Description of Sampling Station : Near Pachmarhi Road Bridge.

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		26.04.17	Not in Package	Not in Package	Not in Package	28.08.17	Not in Package	Not in Package	Not in Package	Not in Package	29.1.18	Not in Package	Not in Package	-	-	-					
2	Appearance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	26	-	-	-	26	-	-	-	-	25°C	-	-	-	-	-					
4	Turbidity	NTU	10	-	-	-	-	-	-	-	-	-	-	-	10.00	10.0	10.0					
5	Colour	PCS	colorless	-	-	-	Colorless	-	-	-	-	Colorless	-	-	-	-	-	10				
6	Odour	T. No	oderless	-	-	-	Odourless	-	-	-	-	Odourless	-	-	-	-	-	Unobjectionable				
7	pH	pH Unit	8.12	-	-	-	8.24	-	-	-	-	8.12	-	-	8.16	8.2	8.1	6.5 to 8.5				
8	Sp. Conductivity	µMhos/cm.	476	-	-	-	246	-	-	-	-	214	-	-	312.00	476.0	214.0					
9	T. Solids	mg/1	310	-	-	-	216	-	-	-	-	168	-	-	231.33	310.0	168.0					
10	D. Solids	mg/1	304	-	-	-	204	-	-	-	-	160	-	-	222.67	304.0	160.0	500				
11	S. Solids	mg/1	14	-	-	-	12	-	-	-	-	8	-	-	11.33	14.0	8.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	BDL	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	BDL	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-	-	-	2.5	-	-	-	-	1.5	-	-	2.00	2.5	1.5	20				
15	Phosphate (PO ₄)	mg/1	-	-	-	-	0.15	-	-	-	-	0.561	-	-	-	-	-					
16	Chloride	mg/1	30.55	-	-	-	23.65	-	-	-	-	15.76	-	-	23.32	30.6	15.8	250				
17	Sulphate (SO ₄)	mg/1	-	-	-	-	10.2	-	-	-	-	6.75	-	-	8.48	10.2	6.8	400				
18	T. Alkalinity	mg/1	152	-	-	-	164	-	-	-	-	126	-	-	147.33	164.0	126.0					
19	T. Hardness	mg/1	138	-	-	-	186	-	-	-	-	118	-	-	147.33	186.0	118.0	300				
20	CalciumHardness	mg/1	102	-	-	-	158	-	-	-	-	86	-	-	115.33	158.0	86.0	200				
21	Magnesium H.	mg/1	36	-	-	-	28	-	-	-	-	32	-	-	32.00	36.0	28.0	100				
22	D. Oxygen	mg/1	-	-	-	-	8.1	-	-	-	-	8.4	-	-	8.25	8.4	8.1	6				
23	B.O.D.	mg/1	2.1	-	-	-	2.4	-	-	-	-	1.6	-	-	2.03	2.4	1.6	2				
24	C.O.D.	mg/1	9.88	-	-	-	30	-	-	-	-	9.6	-	-	16.49	30.0	9.6					
25	Sodium	mg/1	5.26	-	-	-	12.6	-	-	-	-	10.2	-	-	9.35	12.6	5.3					
26	Potassium	mg/1	1.01	-	-	-	1.4	-	-	-	-	1	-	-	1.14	1.4	1.0					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50+				
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Cat.			B	-	-	-	B	-	-	-	-	A	-	-	B	-	-					

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2018-2019																						
Natural Water Resource : River Denwa.																						
Description of Sampling Station : Near Pachmarhi Road Bridge.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling					12.07.18						Dry			-	-	-					
2	Appearance		-	-	-	Turbid	-	-	-	-	-				-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-											
4	Turbidity	NTU	-	-	-	156.4	-	-	-	-	-				156.40	156.4	156.4					
5	Colour	PCS	-	-	-	Muddy	-	-	-	-	-				-	-	-	10				
6	Odour	T. No	-	-	-	Odourless	-	-	-	-	-				-	-	-	Unobjectionable				
7	pH	pH Unit	-	-	-	7.81	-	-	-	-	-				7.81	7.8	7.8	6.5 to 8.5				
8	Sp. Conductivity	µMhos/cm.	-	-	-	236.4	-	-	-	-	-				236.40	236.4	236.4					
9	T. Solids	mg/1	-	-	-	488	-	-	-	-	-				488.00	488.0	488.0					
10	D. Solids	mg/1	-	-	-	262	-	-	-	-	-				262.00	262.0	262.0	500				
11	S. Solids	mg/1	-	-	-	226	-	-	-	-	-				226.00	226.0	226.0					
12	Amm. Nitrogen	mg/1	-	-	-	BDL	-	-	-	-	-				#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-	-	BDL	-	-	-	-	-				#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-	-	2.2	-	-	-	-	-				2.20	2.2	2.2	20				
15	Phosphate (PO ₄)	mg/1	-	-	-	0.56	-	-	-	-	-											
16	Chloride	mg/1	-	-	-	26.6	-	-	-	-	-				26.60	26.6	26.6	250				
17	Sulphate (SO ₄)	mg/1	-	-	-	8.25	-	-	-	-	-				8.25	8.3	8.3	400				
18	T. Alkalinity	mg/1	-	-	-	166	-	-	-	-	-				166.00	166.0	166.0					
19	T. Hardness	mg/1	-	-	-	166	-	-	-	-	-				166.00	166.0	166.0	300				
20	Calcium Hardness	mg/1	-	-	-	136	-	-	-	-	-				136.00	136.0	136.0	200				
21	Magnesium H.	mg/1	-	-	-	30	-	-	-	-	-				30.00	30.0	30.0	100				
22	D. Oxygen	mg/1	-	-	-	8.1	-	-	-	-	-				8.10	8.1	8.1	6				
23	B.O.D.	mg/1	-	-	-	1.5	-	-	-	-	-				1.50	1.5	1.5	2				
24	C.O.D.	mg/1	-	-	-	10	-	-	-	-	-				10.00	10.0	10.0					
25	Sodium	mg/1	-	-	-	15.8	-	-	-	-	-				15.80	15.8	15.8					
26	Potassium	mg/1	-	-	-	1.06	-	-	-	-	-				1.06	1.1	1.1					
27	T. Coliform	MPN/100ml	-	-	-	540	-	-	-	-	-				-	-	-	50+				
28	F. Coliform	MPN/100ml	-	-	-	<2	-	-	-	-	-				-	-	-					
29	Boron	mg/1	-	-	-	BDL	-	-	-	-	-											
30	Fluoride	mg/1	-	-	-	0.25	-	-	-	-	-							1.5				
31	P. Alkalinity	mg/1	-	-	-	Absent	-	-	-	-	-											
32	T.K.N.	mg/1	-	-	-	1.4	-	-	-	-	-				-	-	-					
Cat.			-	-	-	C	-	-	-	-	-				C	-	-					

Pachmarhi Lake

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																																					
Water Quality during Year - 2013-2014																																					
Natural Water Resource : Pachmarhi Lake at Pachmari																																					
Description of Sampling Station : Lake water.																																					
S.No.	Characteristic	Unit	Lying in category												A																						
			April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E															
1	Date of Sampling		28.4.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
2	Appearance		Sl.Turbid	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
4	Turbidity	NTU	3	-	-	-	-	-	-	-	-	-	-	-	-	3.50	4	3																			
5	Colour	PCS	CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
6	Odour	T. No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
7	pH	pH Unit	7.1	-	-	-	-	-	-	-	-	-	-	-	7.35	7.6	7.1	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5														
8	Sp. Conductivity	µMhos/cm.	344	-	-	-	-	-	-	-	-	-	-	-	257	344	170																				
9	T. Solids	mg/1	235	-	-	-	-	-	-	-	-	-	-	-	169	235	103																				
10	D. Solids	mg/1	224	-	-	-	-	-	-	-	-	-	-	-	158	224	92	500																			
11	S. Solids	mg/1	11	-	-	-	-	-	-	-	-	-	-	-	11	11	11																				
12	Amm. Nitrogen	mg/1	0.005	-	-	-	-	-	-	-	-	-	-	-	0.1075	0.21	0.005																				
13	Nitrite Nitrogen	mg/1	BDL	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
14	Nitrate Nitrogen	mg/1	0.75	-	-	-	-	-	-	-	-	-	-	-	1.68	2.60	0.75	20																			
15	Phosphate (PO ₄)	mg/1	0.132	-	-	-	-	-	-	-	-	-	-	-	0.18	0.23	0.132																				
16	Chloride	mg/1	26.41	-	-	-	-	-	-	-	-	-	-	-	19.555	26.41	12.7	250																			
17	Sulphate (SO ₄)	mg/1	5.5	-	-	-	-	-	-	-	-	-	-	-	5.375	5.50	5.25	400																			
18	T. Alkalinity	mg/1	160	-	-	-	-	-	-	-	-	-	-	-	119	160	78																				
19	T. Hardness	mg/1	156	-	-	-	-	-	-	-	-	-	-	-	114	156	72	300																			
20	CalciumHardness	mg/1	80	-	-	-	-	-	-	-	-	-	-	-	57	80	34	200																			
21	Magnesium H.	mg/1	76	-	-	-	-	-	-	-	-	-	-	-	57	76	38	100																			
22	D. Oxygen	mg/1	5	-	-	-	-	-	-	-	-	-	-	-	5.50	6.00	5	6	5	4	4																
23	B.O.D.	mg/1	2.9	-	-	-	-	-	-	-	-	-	-	-	2.6	2.9	2.3	2	3	4																	
24	C.O.D.	mg/1	29.64	-	-	-	-	-	-	-	-	-	-	-	19.62	29.64	9.6																				
25	Sodium	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	9.41	9.41	9.41																				
26	Potassium	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	3.43	3.43	3.43																				
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	500	5000																	
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																				

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2014-2015																						
Natural Water Resource : Pachmarhi Lake, Pachamarhi.															Lying in category		A				MISSING	
Description of Sampling Station : Lake water.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		NR							29.11.14		-	-	-	-	-	-					
2	Appearance		-	-		-	-	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-		-	-	-	-	27	-	-	-	-	27.00	27	27					
4	Turbidity	NTU	-	-		-	-	-	-	4	-	-	-	-	4.00	4	4					
5	Colour	PCS	-	-		-	-	-	-	CL	-	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	-	-		-	-	-	-	OL	-	-	-	-				Unobjectio nable	UNOBJECTI ONABLE			
7	pH	pH Unit	-	-		-	-	-	-	7.62	-	-	-	-	7.62	7.62	7.62	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	-	-		-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
9	T. Solids	mg/1	-	-		-	-	-	-	112	-	-	-	-	112	112	112					
10	D. Solids	mg/1	-	-		-	-	-	-	94	-	-	-	-	94	94	94	500		1500		2100
11	S. Solids	mg/1	-	-		-	-	-	-	18	-	-	-	-	18	18	18					
12	Amm. Nitrogen	mg/1	-	-		-	-	-	-	BDL	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-		-	-	-	-	BDL	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-		-	-	-	-	3.5	-	-	-	-	3.5	3.5	3.5	20		50		
15	Phosphate (PO ₄)	mg/1	-	-		-	-	-	-	BDL	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
16	Chloride	mg/1	-	-		-	-	-	-	5.91	-	-	-	-	5.91	5.91	5.91	250		600		600
17	Sulphate (SO ₄)	mg/1	-	-		-	-	-	-	9	-	-	-	-	9	9	9	400		400		1000
18	T. Alkalinity	mg/1	-	-		-	-	-	-	64	-	-	-	-	64	64	64					
19	T. Hardness	mg/1	-	-		-	-	-	-	70	-	-	-	-	70	70	70	300				
20	CalciumHardness	mg/1	-	-		-	-	-	-	36	-	-	-	-	36	36	36	200				
21	Magnesium H.	mg/1	-	-		-	-	-	-	34	-	-	-	-	34	34	34	100				
22	D. Oxygen	mg/1	-	-		-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	6	5	4	4	
23	B.O.D.	mg/1	-	-		-	-	-	-	1.1	-	-	-	-	1.1	1.1	1.1	2	3	4		
24	C.O.D.	mg/1	-	-		-	-	-	-	9.4	-	-	-	-	9.4	9.4	9.4					
25	Sodium	mg/1	-	-		-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
26	Potassium	mg/1	-	-		-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
27	T. Coliform	MPN/100ml	-	-		-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml	-	-		-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
29	T.K.N.	mg/1	-	-		-	-	-	-	-	-	-	-	-	-	-	-					

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
 Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2016-2017

Natural Water Resource : Pachmarhi Lake, Pachmarhi (Distt.-Hoshangaba

Lying in cat A

MISSING

Description of Sampling Station: Pachmarhi Lake, Pachmarhi

LYING IN

b

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of			-	-	-	10.08.16	-	-	-	-	-	-	-	-	-	-					
2	Appearance														-	-	-					
3	Temperature	oC													-	-	-					
4	Turbidity	NTU					12								12.00	12.0	12.0					
5	Colour	PCS					Colourless								-	-	-	10	300	300		
6	Odour	T. No					Odourless								-	-	-	Unobjectio nable	UNOBJECTI ONABLE			
7	pH	pH Unit					7.83								7.83	7.8	7.8	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.					348								348.00	348.0	348.0					
9	T. Solids	mg/1					266								266.00	266.0	266.0					
10	D. Solids	mg/1					252								252.00	252.0	252.0	500		1500		2100
11	S. Solids	mg/1					14								14.00	14.0	14.0					
12	Amm. Nitrogen	mg/1													#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1													#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1													#DIV/0!	#DIV/0!	#DIV/0!	20		50		
15	Phosphate (PO ₄)	mg/1													#DIV/0!	#DIV/0!	#DIV/0!					
16	Chloride	mg/1					35.47								35.47	35.5	35.5	250		600		600
17	Sulphate (SO ₄)	mg/1													#DIV/0!	#DIV/0!	#DIV/0!	400		400		1000
18	T. Alkalinity	mg/1					138								138.00	138.0	138.0					
19	T. Hardness	mg/1					146								146.00	146.0	146.0	300				
20	CalciumHardness	mg/1					112								112.00	112.0	112.0	200				
21	Magnesium H.	mg/1					34								34.00	34.0	34.0	100				
22	D. Oxygen	mg/1					7.6								7.60	7.6	7.6	6	5	4	4	
23	B.O.D.	mg/1					2.4								2.40	2.4	2.4	2	3	4		
24	C.O.D.	mg/1					20								20.00	20.0	20.0					
25	Sodium	mg/1					15.74								15.74	15.7	15.7					
26	Potassium	mg/1					2.1								2.10	2.1	2.1					
27	T. Coliform	MPN/100ml													#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml													#DIV/0!	#DIV/0!	#DIV/0!					
29	T.K.N.	mg/1													-	-	-					
Category							B								B							

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2016-2017

Natural Water Resource : Pachmarhi Lake, Pachmarhi (Distt.-Hoshangaba

Lying in cateA

MISSING

Description of Sampling Station: Pachmarhi Lake, Pachmarhi

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling			-	-	-	10.08.16	-	-	-	-				-	-	-					
2	Appearance														-	-	-					
3	Temperature	oC													-	-	-					
4	Turbidity	NTU					12								12.00	12.0	12.0					
5	Colour	PCS					Colourless								-	-	-	10	300	300		
6	Odour	T. No					Odourless								-	-	-	Unobjectio nable	UNOBJECTI ONABLE			
7	pH	pH Unit					7.83								7.83	7.8	7.8	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.					348								348.00	348.0	348.0					
9	T. Solids	mg/1					266								266.00	266.0	266.0					
10	D. Solids	mg/1					252								252.00	252.0	252.0	500		1500		2100
11	S. Solids	mg/1					14								14.00	14.0	14.0					
12	Amm. Nitrogen	mg/1													#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1													#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1													#DIV/0!	#DIV/0!	#DIV/0!	20		50		
15	Phosphate (PO ₄)	mg/1													#DIV/0!	#DIV/0!	#DIV/0!					
16	Chloride	mg/1					35.47								35.47	35.5	35.5	250		600		600
17	Sulphate (SO ₄)	mg/1													#DIV/0!	#DIV/0!	#DIV/0!	400		400		1000
18	T. Alkalinity	mg/1					138								138.00	138.0	138.0					
19	T. Hardness	mg/1					146								146.00	146.0	146.0	300				
20	CalciumHardness	mg/1					112								112.00	112.0	112.0	200				
21	Magnesium H.	mg/1					34								34.00	34.0	34.0	100				
22	D. Oxygen	mg/1					7.6								7.60	7.6	7.6	6	5	4	4	
23	B.O.D.	mg/1					2.4								2.40	2.4	2.4	2	3	4		
24	C.O.D.	mg/1					20								20.00	20.0	20.0					
25	Sodium	mg/1					15.74								15.74	15.7	15.7					
26	Potassium	mg/1					2.1								2.10	2.1	2.1					
27	T. Coliform	MPN/100ml													#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml													#DIV/0!	#DIV/0!	#DIV/0!					
29	T.K.N.	mg/1													-	-	-					
Category							B								B							

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2017-2018

Natural Water Resource : Pachmarhi Lake, Pachmarhi (Distt.-Hoshangaba

Lying in cateA

MISSING

Description of Sampling Station: Pachmarhi Lake, Pachmarhi

LYING IN b

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		19.4.17				28.08.17					29.1.18			-	-	-					
2	Appearance		Clear	-	-	-	Clear	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-	26 °C	-	-	-	-	26°C	-	-	-	-	-					
4	Turbidity	NTU	14	-	-	-	-	-	-	-	-	-	-	-	14.00	14.0	14.0					
5	Colour	PCS	Colorless	-	-	-	Colorless	-	-	-	-	Colorless	-	-	-	-	-	10	300	300		
6	Odour	T. No	Odourless	-	-	-	Odourless	-	-	-	-	Odourless	-	-	-	-	-	Unobjectio	UNOBJECTI			
			s				s					s						nable	ONABLE			
7	pH	pH Unit	7.95	-	-	-	8.24	-	-	-	-	7.84	-	-	8.01	8.2	7.8	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	346	-	-	-	246	-	-	-	-	286	-	-	292.67	346.0	246.0					
9	T. Solids	mg/1	296	-	-	-	216	-	-	-	-	218	-	-	243.33	296.0	216.0					
10	D. Solids	mg/1	286	-	-	-	204	-	-	-	-	204	-	-	231.33	286.0	204.0	500		1500		2100
11	S. Solids	mg/1	10	-	-	-	12	-	-	-	-	14	-	-	12.00	14.0	10.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	BDL	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	BDL	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-	-	-	2.5	-	-	-	-	1.15	-	-	1.83	2.5	1.2	20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	0.15	-	-	-	-	0.39	-	-	0.27	0.4	0.2					
16	Chloride	mg/1	23.65	-	-	-	23.65	-	-	-	-	18.72	-	-	22.01	23.7	18.7	250		600		600
17	Sulphate (SO ₄)	mg/1	-	-	-	-	10.2	-	-	-	-	6.75	-	-	8.48	10.2	6.8	400		400		1000
18	T. Alkalinity	mg/1	136	-	-	-	164	-	-	-	-	144	-	-	148.00	164.0	136.0					
19	T. Hardness	mg/1	124	-	-	-	186	-	-	-	-	138	-	-	149.33	186.0	124.0	300				
20	CalciumHardness	mg/1	82	-	-	-	158	-	-	-	-	104	-	-	114.67	158.0	82.0	200				
21	Magnesium H.	mg/1	42	-	-	-	28	-	-	-	-	36	-	-	35.33	42.0	28.0	100				
22	D. Oxygen	mg/1	8.2	-	-	-	8.1	-	-	-	-	8.2	-	-	8.17	8.2	8.1	6	5	4	4	
23	B.O.D.	mg/1	1.9	-	-	-	2.4	-	-	-	-	2.2	-	-	2.17	2.4	1.9	2	3	4		
24	C.O.D.	mg/1	19.2	-	-	-	30	-	-	-	-	19.6	-	-	22.93	30.0	19.2					
25	Sodium	mg/1	6.4	-	-	-	12.6	-	-	-	-	8.68	-	-	9.23	12.6	6.4					
26	Potassium	mg/1	1	-	-	-	1.4	-	-	-	-	1.1	-	-	1.17	1.4	1.0					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Category			A	-	-	-	B	-	-	-	-	B	-	-	B							

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2018-2019																						
Natural Water Resource : Pachmarhi Lake, Pachmarhi (Distt.-Hoshangabad)															Lying in cate A		MISSING					
Description of Sampling Station : Pachmarhi Lake, Pachmarhi															LYING IN							
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		18.04.18				29.08.18								-	-	-					
2	Appearance		-	-	-	-	Clear	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	28°C	-	-	-	23	-	-	-	-	-	-	-	-	-	-					
4	Turbidity	NTU	14	-	-	-	-	-	-	-	-	-	-	-	14.00	14.0	14.0					
5	Colour	PCS	Colorless	-	-	-	Colorless	-	-	-	-	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	Odourless	-	-	-	Odourless	-	-	-	-	-	-	-	-	-	-	Unobjectio nable	UNOBJECTI ONABLE			
7	pH	pH Unit	7.91	-	-	-	7.68	-	-	-	-	-	-	-	7.80	7.9	7.7	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	330	-	-	-	324	-	-	-	-	-	-	-	327.00	330.0	324.0					
9	T. Solids	mg/1	248	-	-	-	204	-	-	-	-	-	-	-	226.00	248.0	204.0					
10	D. Solids	mg/1	231	-	-	-	186	-	-	-	-	-	-	-	208.50	231.0	186.0	500		1500		2100
11	S. Solids	mg/1	17	-	-	-	18	-	-	-	-	-	-	-	17.50	18.0	17.0					
12	Amm. Nitrogen	mg/1	BDL	-	-	-	0.21	-	-	-	-	-	-	-	0.21	0.2	0.2					
13	Nitrite Nitrogen	mg/1	0.2	-	-	-	0.15	-	-	-	-	-	-	-	0.18	0.2	0.2					
14	Nitrate Nitrogen	mg/1	1.84	-	-	-	3.25	-	-	-	-	-	-	-	2.55	3.3	1.8	20		50		
15	Phosphate (PO ₄)	mg/1	0.38	-	-	-	0.75	-	-	-	-	-	-	-	0.57	0.8	0.4					
16	Chloride	mg/1	32.98	-	-	-	19.99	-	-	-	-	-	-	-	26.49	33.0	20.0	250		600		600
17	Sulphate (SO ₄)	mg/1	8.25	-	-	-	13.25	-	-	-	-	-	-	-	10.75	13.3	8.3	400		400		1000
18	T. Alkalinity	mg/1	146	-	-	-	168	-	-	-	-	-	-	-	157.00	168.0	146.0					
19	T. Hardness	mg/1	134	-	-	-	170	-	-	-	-	-	-	-	152.00	170.0	134.0	300				
20	CalciumHardness	mg/1	80	-	-	-	138	-	-	-	-	-	-	-	109.00	138.0	80.0	200				
21	Magnesium H.	mg/1	54	-	-	-	32	-	-	-	-	-	-	-	43.00	54.0	32.0	100				
22	D. Oxygen	mg/1	7.4	-	-	-	8.4	-	-	-	-	-	-	-	7.90	8.4	7.4	6	5	4	4	
23	B.O.D.	mg/1	2.5	-	-	-	2.6	-	-	-	-	-	-	-	2.55	2.6	2.5	2	3	4		
24	C.O.D.	mg/1	20	-	-	-	19.2	-	-	-	-	-	-	-	19.60	20.0	19.2					
25	Sodium	mg/1	8.74	-	-	-	16.4	-	-	-	-	-	-	-	12.57	16.4	8.7					
26	Potassium	mg/1	1.2	-	-	-	2.1	-	-	-	-	-	-	-	1.65	2.1	1.2					
27	T. Coliform	MPN/100ml	>1600	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml	<2	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Category			C	-	-	-	B	-	-	-	-	-	-	-	B							

Tawa Dam Itarsi

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2013-2014																						
Natural Water Resource : Tawa dam. (Distt.-Raisen)													Lying in cat A									
Description of Sampling Station : Near chanal no.2,Tawanagar,Itarsi.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		27.4.13	-	-	-	-	-	-	10.11.13	-	-	25.2.14	-	-	-	-					
2	Appearance		Sl.Turbid	-	-	-	-	-	-	-	-	-	Sl.Turbid	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
4	Turbidity	NTU	12	-	-	-	-	-	-	-	-	-	12	-	12.00	12	12					
5	Colour	PCS	CL	-	-	-	-	-	-	-	-	-	CL	-	-	-	-	10	300	300		
6	Odour	T. No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	8.02	-	-	-	-	-	-	7.65	-	-	7.38	-	7.68	8.02	7.38	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	262	-	-	-	-	-	-	-	-	-	209	-	235.5	262	209					
9	T. Solids	mg/1	203	-	-	-	-	-	-	294	-	-	174	-	223.67	294	174					
10	D. Solids	mg/1	165	-	-	-	-	-	-	257	-	-	136	-	186	257	136	500		1500		2100
11	S. Solids	mg/1	38	-	-	-	-	-	-	37	-	-	38	-	37.67	38	37					
12	Amm. Nitrogen	mg/1	0.025	-	-	-	-	-	-	0.035	-	-	0.04	-	0.03	0.04	0.025					
13	Nitrite Nitrogen	mg/1	0.015	-	-	-	-	-	-	0.06	-	-	0.02	-	0.03	0.06	0.015					
14	Nitrate Nitrogen	mg/1	2.1	-	-	-	-	-	-	2.1	-	-	1.5	-	1.9	2.1	1.5	20		50		
15	Phosphate (PO ₄)	mg/1	0.132	-	-	-	-	-	-	BDL	-	-	0.066	-	0.099	0.132	0.066					
16	Chloride	mg/1	19.56	-	-	-	-	-	-	5.78	-	-	11.57	-	12.30	19.56	5.78	250		600		600
17	Sulphate (SO ₄)	mg/1	7.5	-	-	-	-	-	-	5.75	-	-	27.5	-	13.58	27.5	5.75	400		400		1000
18	T. Alkalinity	mg/1	106	-	-	-	-	-	-	86	-	-	102	-	98	106	86					
19	T. Hardness	mg/1	94	-	-	-	-	-	-	80	-	-	100	-	91.33	100	80	300				
20	CalciumHardness	mg/1	76	-	-	-	-	-	-	46	-	-	60	-	60.67	76	46	200				
21	Magnesium H.	mg/1	18	-	-	-	-	-	-	34	-	-	40	-	30.67	40	18	100				
22	D. Oxygen	mg/1	5.3	-	-	-	-	-	-	7.9	-	-	7.9	-	7.03	7.9	5.3	6	5	4	4	
23	B.O.D.	mg/1	1.8	-	-	-	-	-	-	0.8	-	-	2.1	-	1.57	2.1	0.8	2	3	4		
24	C.O.D.	mg/1	19.76	-	-	-	-	-	-	10	-	-	29.04	-	19.6	29.04	10					
25	Sodium	mg/1	-	-	-	-	-	-	-	7.59	-	-	7.95	-	7.77	7.95	7.59					
26	Potassium	mg/1	-	-	-	-	-	-	-	3.43	-	-	2.97	-	3.20	3.43	2.97					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2013-2014																						
Natural Water Resource : Tawa dam.																		Lying in c/A				
Description of Sampling Station : Tawa dam water after HEG Hydral power plant outlet Tawanagar.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		27.4.13	-	-	-	-	-	-	10.11.13	-	-	25.2.14	-	-	-	-					
2	Appearance		Sl.Turbid	-	-	-	-	-	-	-	-	-	Sl.Turbid	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
4	Turbidity	NTU	14	-	-	-	-	-	-	70	-	-	16	-	33.33	70	14					
5	Colour	PCS	CL	-	-	-	-	-	-	-	-	-	CL	-	-	-	-	10	300	300		
6	Odour	T. No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	7.85	-	-	-	-	-	-	7.35	-	-	7.9	-	7.70	7.9	7.35	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	265	-	-	-	-	-	-	-	-	-	212	-	238.5	265	212					
9	T. Solids	mg/1	212	-	-	-	-	-	-	294	-	-	192	-	232.67	294	192					
10	D. Solids	mg/1	168	-	-	-	-	-	-	247	-	-	143	-	186	247	143	500		1500		2100
11	S. Solids	mg/1	44	-	-	-	-	-	-	47	-	-	49	-	46.67	49	44					
12	Amm. Nitrogen	mg/1	0.04	-	-	-	-	-	-	0.075	-	-	0.1	-	0.07	0.1	0.04					
13	Nitrite Nitrogen	mg/1	0.005	-	-	-	-	-	-	0.09	-	-	0.05	-	0.05	0.09	0.005					
14	Nitrate Nitrogen	mg/1	2	-	-	-	-	-	-	2.8	-	-	1.8	-	2.2	2.8	1.8	20		50		
15	Phosphate (PO ₄)	mg/1	0.165	-	-	-	-	-	-	BDL	-	-	0.099	-	0.132	0.165	0.099					
16	Chloride	mg/1	15.65	-	-	-	-	-	-	7.71	-	-	13.49	-	12.28	15.65	7.71	250		600		600
17	Sulphate (SO ₄)	mg/1	9.5	-	-	-	-	-	-	7.75	-	-	28.25	-	15.17	28.25	7.75	400		400		1000
18	T. Alkalinity	mg/1	110	-	-	-	-	-	-	82	-	-	110	-	100.67	110	82					
19	T. Hardness	mg/1	90	-	-	-	-	-	-	78	-	-	114	-	94.00	114	78	300				
20	CalciumHardness	mg/1	72	-	-	-	-	-	-	46	-	-	62	-	60.00	72	46	200				
21	Magnesium H.	mg/1	18	-	-	-	-	-	-	32	-	-	52	-	34.00	52	18	100				
22	D. Oxygen	mg/1	5.1	-	-	-	-	-	-	7.3	-	-	7.7	-	6.70	7.7	5.1	6	5	4	4	
23	B.O.D.	mg/1	2.7	-	-	-	-	-	-	0.9	-	-	2.3	-	1.97	2.7	0.9	2	3	4		
24	C.O.D.	mg/1	29.64	-	-	-	-	-	-	10	-	-	29.04	-	22.893	29.64	10					
25	Sodium	mg/1	-	-	-	-	-	-	-	7.68	-	-	8.53	-	8.11	8.53	7.68					
26	Potassium	mg/1	-	-	-	-	-	-	-	3.46	-	-	3.14	-	3.30	3.46	3.14					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2014-2015																						
Natural Water Resource : Tawa dam. (Distt.-Raisen)														Lying in cat A								
Description of Sampling Station : Near chanal no.2,Tawanagar,Itarsi.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		7.4.14				30.8.14			20.11.14	-	-	N.R.	-	-	-	-					
2	Appearance		sl.turbid	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
4	Turbidity	NTU	4	-	-	-	6	-	-	8	-	-	-	-	6.00	8	4					
5	Colour	PCS	CL	-	-	-	-	-	-	CL	-	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	-	-	-	-	-	-	-	OL	-	-	-	-				Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	8.01	-	-	-	7.11	-	-	8.17	-	-	-	-	7.76	8.17	7.11	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	231	-	-	-	-	-	-	350	-	-	-	-	290.50	350	231					
9	T. Solids	mg/1	174	-	-	-	136	-	-	374	-	-	-	-	228	374	136					
10	D. Solids	mg/1	164	-	-	-	116	-	-	344	-	-	-	-	208	344	116	500		1500		2100
11	S. Solids	mg/1	10	-	-	-	20	-	-	30	-	-	-	-	20	30	10					
12	Amm. Nitrogen	mg/1	0.95	-	-	-	0.12	-	-	-	-	-	-	-	0.535	0.95	0.12					
13	Nitrite Nitrogen	mg/1	-	-	-	-	BDL	-	-	0.7	-	-	-	-	0.7	0.7	0.7					
14	Nitrate Nitrogen	mg/1	1	-	-	-	3.5	-	-	2.3	-	-	-	-	2.2666667	3.5	1	20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	0.066	-	-	-	-	-	-	-	0.066	0.066	0.066					
16	Chloride	mg/1	18.99	-	-	-	8	-	-	11.82	-	-	-	-	12.936667	18.99	8	250		600		600
17	Sulphate (SO ₄)	mg/1	9.5	-	-	-	10.25	-	-	6.9	-	-	-	-	8.8833333	10.25	6.9	400		400		1000
18	T. Alkalinity	mg/1	102	-	-	-	92	-	-	190	-	-	-	-	128	190	92					
19	T. Hardness	mg/1	86	-	-	-	98	-	-	160	-	-	-	-	114.66667	160	86	300				
20	CalciumHardness	mg/1	72	-	-	-	54	-	-	98	-	-	-	-	74.666667	98	54	200				
21	Magnesium H.	mg/1	14	-	-	-	44	-	-	62	-	-	-	-	40	62	14	100				
22	D. Oxygen	mg/1	7.9	-	-	-	6.6	-	-	8.2.	-	-	-	-	7.25	7.9	6.6	6	5	4	4	
23	B.O.D.	mg/1	2.4	-	-	-	1	-	-	1.8	-	-	-	-	1.7333333	2.4	1	2	3	4		
24	C.O.D.	mg/1	19.39	-	-	-	10	-	-	20	-	-	-	-	16.463333	20	10					
25	Sodium	mg/1	5	-	-	-	7.63	-	-	16.49	-	-	-	-	9.7066667	16.49	5					
26	Potassium	mg/1	1.2	-	-	-	1.91	-	-	2.94	-	-	-	-	2.0166667	2.94	1.2					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	Cat.																					

MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																							
Water Quality during Year - 2014-2015																							
Natural Water Resource : Tawa dam.																		Lying in c/A					
Description of Sampling Station : Tawa dam water after HEG Hydral power plant outlet Tawanagar.																							
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E	
1	Date of Sampling		7.4.14				30.8.14			20.11.14	-	-	N.R.	-	-	-	-						
2	Appearance		sl.turbid	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!						
4	Turbidity	NTU	3	-	-	-	6	-	-	8	-	-	-	-	5.67	8	3						
5	Colour	PCS	CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	300	300			
6	Odour	T. No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE				
7	pH	pH Unit	8.1	-	-	-	6.89	-	-	8	-	-	-	-	7.66	8.1	6.89	6.5 to 8.5			6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	233	-	-	-	-	-	-	360	-	-	-	-	296.50	360	233						
9	T. Solids	mg/1	175	-	-	-	149	-	-	365	-	-	-	-	229.66667	365	149						
10	D. Solids	mg/1	164	-	-	-	130	-	-	324	-	-	-	-	206	324	130	500			1500		2100
11	S. Solids	mg/1	11	-	-	-	19	-	-	41	-	-	-	-	23.666667	41	11						
12	Amm. Nitrogen	mg/1	1.2	-	-	-	0.105	-	-	-	-	-	-	-	0.6525	1.2	0.105						
13	Nitrite Nitrogen	mg/1	-	-	-	-	BDL	-	-	0.06	-	-	-	-	0.06	0.06	0.06						
14	Nitrate Nitrogen	mg/1	2.2	-	-	-	-	-	-	2.2	-	-	-	-	2.2	2.2	2.2	20			50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!						
16	Chloride	mg/1	20.99	-	-	-	10	-	-	12	-	-	-	-	14.33	20.99	10	250			600		600
17	Sulphate (SO ₄)	mg/1	10.25	-	-	-	10.5	-	-	6.2	-	-	-	-	8.9833333	10.5	6.2	400			400		1000
18	T. Alkalinity	mg/1	104	-	-	-	96	-	-	182	-	-	-	-	127.33333	182	96						
19	T. Hardness	mg/1	90	-	-	-	100	-	-	164	-	-	-	-	118	164	90	300					
20	CalciumHardness	mg/1	78	-	-	-	60	-	-	100	-	-	-	-	79.333333	100	60	200					
21	Magnesium H.	mg/1	12	-	-	-	40	-	-	64	-	-	-	-	38.666667	64	12	100					
22	D. Oxygen	mg/1	8.6	-	-	-	6.5	-	-	7.8	-	-	-	-	7.6333333	8.6	6.5	6	5		4	4	
23	B.O.D.	mg/1	1.2	-	-	-	1.1	-	-	1.7	-	-	-	-	1.3333333	1.7	1.1	2	3		4		
24	C.O.D.	mg/1	9.6	-	-	-	10	-	-	19	-	-	-	-	12.866667	19	9.6						
25	Sodium	mg/1	4.5	-	-	-	7.89	-	-	11	-	-	-	-	7.7966667	11	4.5						
26	Potassium	mg/1	1	-	-	-	1.89	-	-	-	-	-	-	-	1.445	1.89	1						
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	50	500		5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2015-2016																						
Natural Water Resource : Tawa dam. (Distt-)													Lying in cat: A									
Description of Sampling Station : Near chanal no.2, Tawanagar, Itarsi.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling						30.08.15								-	-	-					
2	Appearance														-	-	-					
3	Temperature	oC													#DIV/0!	#DIV/0!	#DIV/0!					
4	Turbidity	NTU					22								22.00	22	22					
5	Colour	PCS					CL								-	-	-	10	300	300		
6	Odour	T. No					OL											Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit					8.4								8.40	8.4	8.4	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.					320								320.00	320	320					
9	T. Solids	mg/1					240								240	240	240					
10	D. Solids	mg/1					216								216	216	216	500		1500		2100
11	S. Solids	mg/1					24								24	24	24					
12	Amm. Nitrogen	mg/1					0.76								0.76	0.76	0.76					
13	Nitrite Nitrogen	mg/1					0.18								0.18	0.18	0.18					
14	Nitrate Nitrogen	mg/1					0.88								0.88	0.88	0.88	20		50		
15	Phosphate (PO ₄)	mg/1					BDL								#DIV/0!	#DIV/0!	#DIV/0!					
16	Chloride	mg/1					26								26	26	26	250		600		600
17	Sulphate (SO ₄)	mg/1					16.1								16.1	16.1	16.1	400		400		1000
18	T. Alkalinity	mg/1					130								130	130	130					
19	T. Hardness	mg/1					100								100	100	100	300				
20	Calcium Hardness	mg/1					78								78	78	78	200				
21	Magnesium H.	mg/1					22								22	22	22	100				
22	D. Oxygen	mg/1					6.8								6.8	6.8	6.8	6	5	4	4	
23	B.O.D.	mg/1					1.4								1.4	1.4	1.4	2	3	4		
24	C.O.D.	mg/1					10								10	10	10					
25	Sodium	mg/1					2.88								2.88	2.88	2.88					
26	Potassium	mg/1					1								1	1	1					
27	T. Coliform	MPN/100ml													#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml																				
29	T.K.N.	mg/1													-	-	-					
Cat.							A															

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2015-2016																						
Natural Water Resource : Tawa dam.														Lying in cat: A								
Description of Sampling Station : Tawa dam water after HEG Hydral power plant outlet Tawanagar.																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling						30.08.15								-	-	-					
2	Appearance														-	-	-					
3	Temperature	oC													#DIV/0!	#DIV/0!	#DIV/0!					
4	Turbidity	NTU					28								28.00	28	28					
5	Colour	PCS					CL								-	-	-	10	300	300		
6	Odour	T. No					OL											Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit					8.35								8.35	8.35	8.35	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.					447								447.00	447	447					
9	T. Solids	mg/1					336								336	336	336					
10	D. Solids	mg/1					306								306	306	306	500		1500		2100
11	S. Solids	mg/1					30								30	30	30					
12	Amm. Nitrogen	mg/1					0.78								0.78	0.78	0.78					
13	Nitrite Nitrogen	mg/1					0.18								0.18	0.18	0.18					
14	Nitrate Nitrogen	mg/1					0.94								0.94	0.94	0.94	20		50		
15	Phosphate (PO ₄)	mg/1					BDL								#DIV/0!	#DIV/0!	#DIV/0!					
16	Chloride	mg/1					23								23	23	23	250		600		600
17	Sulphate (SO ₄)	mg/1					18.1								18.1	18.1	18.1	400		400		1000
18	T. Alkalinity	mg/1					120								120	120	120					
19	T. Hardness	mg/1					132								132	132	132	300				
20	Calcium Hardness	mg/1					88								88	88	88	200				
21	Magnesium H.	mg/1					44								44	44	44	100				
22	D. Oxygen	mg/1					6.9								6.9	6.9	6.9	6	5	4	4	
23	B.O.D.	mg/1					1.8								1.8	1.8	1.8	2	3	4		
24	C.O.D.	mg/1					10								10	10	10					
25	Sodium	mg/1					2.98								2.98	2.98	2.98					
26	Potassium	mg/1					1.2								1.2	1.2	1.2					
27	T. Coliform	MPN/100ml													#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml																				
29	T.K.N.	mg/1													-	-	-					
Cat.							A								A							

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2016-2017

Natural Water Resource : Tawa dam. (Distt.- Hoshangabad)

Discription of Sampling Station :- Near chanal no.2, Tawanagar, Itarsi.

Lying in c: A

Lying in B

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		-	25.05.16	-	-	24.08.16	27.09.16	-	18.11.2016	20.12.16	-	09.02.2017	02.03.17	-	-	-					
2	Appearance		-		-	-	-	-	-			-	Clear		-	-	-					
3	Temperature	oC	-		-	-	-	-	-	26		-	26		26.00	26.0	26.0					
4	Turbidity	NTU	-	6	-	-	8	12	-	10	10	-	8	8	8.86	12.0	6.0					
5	Colour	PCS	-	Colourless	-	-	Colourless	Colourless	-	colourless	colourless	-	colourless	colourless	-	-	-	10	300	300		
6	Odour	T. No	-	Odourless	-	-	Odourless	Odourless	-	Odourless	Odourless	-	Odourless	Odourless				Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	-	7.85	-	-	8.11	8.13	-	7.82	8.28	-	7.54	7.76	7.93	8.3	7.5	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	-	288	-	-	252	313	-	368	296	-	358	384	322.71	384.0	252.0					
9	T. Solids	mg/1	-	210	-	-	194	246	-	178	238	-	252	374	241.71	374.0	178.0					
10	D. Solids	mg/1	-	196	-	-	184	232	-	168	228	-	246	364	231.14	364.0	168.0	500		1500		2100
11	S. Solids	mg/1	-	14	-	-	10	14	-	10	10	-	10	10	11.14	14.0	10.0					
12	Amm. Nitrogen	mg/1	-	0.025	-	-			-		BDL	-		0.012	0.02	0.0	0.0					
13	Nitrite Nitrogen	mg/1	-	0.01	-	-			-		0.03	-		BDL	0.02	0.0	0.0					
14	Nitrate Nitrogen	mg/1	-	0.2	-	-			-		0.4	-		0.68	0.43	0.7	0.2	20		50		
15	Phosphate (PO ₄)	mg/1	-		-	-			-		BDL	-		0.016	0.02	0.0	0.0					
16	Chloride	mg/1	-	14.9	-	-	28.57	30.85	-	26.6	27.59	-	29.77	29.89	26.88	30.9	14.9	250		600		600
17	Sulphate (SO ₄)	mg/1	-	11	-	-			-		12.73	-		1.04	8.26	12.7	1.0	400		400		1000
18	T. Alkalinity	mg/1	-	132	-	-	154	128	-	152	138	-	156	186	149.43	186.0	128.0					
19	T. Hardness	mg/1	-	120	-	-	142	138	-	146	108	-	152	152	136.86	152.0	108.0	300				
20	Calcium Hardness	mg/1	-	78	-	-	112	98	-	110	102	-	116	116	104.57	116.0	78.0	200				
21	Magnesium H.	mg/1	-	42	-	-	30	40	-	36	36	-	36	36	36.57	42.0	30.0	100				
22	D. Oxygen	mg/1	-	8	-	-	8.2	7.9	-	7.6	8	-	7.4	7.7	7.83	8.2	7.4	6	5	4	4	
23	B.O.D.	mg/1	-	1.4	-	-	1.4	2.2	-	2.1	2.1	-	1.9	2.2	1.90	2.2	1.4	2	3	4		
24	C.O.D.	mg/1	-	9.6	-	-	10	20	-	9.2	10	-	9.2	19.88	12.55	20.0	9.2					
25	Sodium	mg/1	-	3.95	-	-	14.31	14.96	-	5.68	15.13	-	5.56	13.72	10.47	15.1	4.0					
26	Potassium	mg/1	-	Nil	-	-	1.01	1.01	-	0.01	Nil	-	0.02	1.02	0.61	1.0	0.0					
27	T. Coliform	MPN/100ml	-	170	-	-		110	-	90	130	-	90	110	116.67	170.0	90.0	50	500	5000		
28	F. Coliform	MPN/100ml	-	<2	-	-		<2	-	<2	<2	-	<2	<2								
29	T.K.N.	mg/1	-	-	-	-			-			-			-	-	-					
	Cat.			B			A	B							B							

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2016-2017

Natural Water Resource : Tawa dam.

Lying in cat. A

Description of Sampling Station : Tawa dam water after HEG Hydral power plant outlet Tawanagar

Lying in B

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		-	-	-	-	24.08.16	-	-	18.11.2016	-	-	09.02.2017	-	-	-	-					
2	Appearance		-	-	-	-	-	-	-	-	-	-	Clear	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	27	-	-	28	-	27.50	28.0	27.0					
4	Turbidity	NTU	-	-	-	-	8	-	-	8	-	-	10	-	8.67	10.0	8.0					
5	Colour	PCS	-	-	-	-	Colourless	-	-	Colourless	-	-	Colourless	-	-	-	-	10	300	300		
6	Odour	T. No	-	-	-	-	Odourless	-	-	Odourless	-	-	Odourless	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	-	-	-	-	8.18	-	-	7.68	-	-	7.64	-	7.83	8.2	7.6	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	-	-	-	-	268	-	-	384	-	-	366	-	339.33	384.0	268.0					
9	T. Solids	mg/1	-	-	-	-	204	-	-	278	-	-	268	-	250.00	278.0	204.0					
10	D. Solids	mg/1	-	-	-	-	194	-	-	266	-	-	256	-	238.67	266.0	194.0	500		1500		2100
11	S. Solids	mg/1	-	-	-	-	10	-	-	12	-	-	12	-	11.33	12.0	10.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
16	Chloride	mg/1	-	-	-	-	29.56	-	-	25.02	-	-	25.77	-	26.78	29.6	25.0	250		600		600
17	Sulphate (SO ₄)	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	400		400		1000
18	T. Alkalinity	mg/1	-	-	-	-	134	-	-	146	-	-	164	-	148.00	164.0	134.0					
19	T. Hardness	mg/1	-	-	-	-	132	-	-	138	-	-	156	-	142.00	156.0	132.0	300				
20	CalciumHardness	mg/1	-	-	-	-	104	-	-	106	-	-	118	-	109.33	118.0	104.0	200				
21	Magnesium H.	mg/1	-	-	-	-	28	-	-	32	-	-	38	-	32.67	38.0	28.0	100				
22	D. Oxygen	mg/1	-	-	-	-	8.1	-	-	7.8	-	-	7.7	-	7.87	8.1	7.7	6	5	4	4	
23	B.O.D.	mg/1	-	-	-	-	1.6	-	-	2.2	-	-	2.2	-	2.00	2.2	1.6	2	3	4		
24	C.O.D.	mg/1	-	-	-	-	10	-	-	9.2	-	-	19.2	-	12.80	19.2	9.2					
25	Sodium	mg/1	-	-	-	-	14.36	-	-	6.25	-	-	6.74	-	9.12	14.4	6.3					
26	Potassium	mg/1	-	-	-	-	1.01	-	-	0.02	-	-	0.04	-	0.36	1.0	0.0					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	110	-	-	130	-	120.00	130.0	110.0	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	<2	-	-	<2	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Cat.																	A					

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2017-2018

Natural Water Resource : Tawa dam.

Description of Sampling Station : Tawa dam water after Hydral power plant outlet Tawanagar, Itars

Lying in cat. A

Lying in B

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E	
1	Date of Sampling						26.08.17			31.11.17			22.2.18		-	-	-						
2	Appearance		-	-	-	-	-	-	-	Clear	-	-	-	-	-	-	-						
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	19	-	19.00	19.0	19.0						
4	Turbidity	NTU	-	-	-	-	-	-	-	*Instrument out of order	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!						
5	Colour	PCS	-	-	-	-	Colorless	-	-	Colorless	-	-	Colorless	-	-	-	-	10	300	300			
6	Odour	T. No	-	-	-	-	Odourless	-	-	Odourless	-	-	Odourless	-				Unobjectionable	UNOBJECTONABLE				
7	pH	pH Unit	-	-	-	-	8.36	-	-	7.58	-	-	8.16	-	8.03	8.4	7.6	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5	
8	Sp. Conductivity	µMhos/cm.	-	-	-	-	266	-	-	220	-	-	276	-	254.00	276.0	220.0						
9	T. Solids	mg/1	-	-	-	-	234	-	-	212	-	-	184	-	210.00	234.0	184.0						
10	D. Solids	mg/1	-	-	-	-	218	-	-	202	-	-	162	-	194.00	218.0	162.0	500		1500			2100
11	S. Solids	mg/1	-	-	-	-	16	-	-	10	-	-	22	-	16.00	22.0	10.0						
12	Amm. Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	-	BDL	-	#DIV/0!	#DIV/0!	#DIV/0!						
13	Nitrite Nitrogen	mg/1	-	-	-	-	BDL	-	-	BDL	-	-	BDL	-	#DIV/0!	#DIV/0!	#DIV/0!						
14	Nitrate Nitrogen	mg/1	-	-	-	-	1.2	-	-	1.65	-	-	2.15	-	1.67	2.2	1.2	20		50			
15	Phosphate (PO ₄)	mg/1	-	-	-	-	0.26	-	-	1.88	-	-	0.49	-	0.88	1.9	0.3						
16	Chloride	mg/1	-	-	-	-	24.63	-	-	21.68	-	-	21.68	-	22.66	24.6	21.7	250		600			600
17	Sulphate (SO ₄)	mg/1	-	-	-	-	6.4	-	-	6.75	-	-	6.75	-	6.63	6.8	6.4	400		400			1000
18	T. Alkalinity	mg/1	-	-	-	-	166	-	-	120	-	-	156	-	147.33	166.0	120.0						
19	T. Hardness	mg/1	-	-	-	-	154	-	-	126	-	-	152	-	144.00	154.0	126.0	300					
20	CalciumHardness	mg/1	-	-	-	-	116	-	-	68	-	-	118	-	100.67	118.0	68.0	200					
21	Magnesium H.	mg/1	-	-	-	-	38	-	-	58	-	-	34	-	43.33	58.0	34.0	100					
22	D. Oxygen	mg/1	-	-	-	-	8.4	-	-	7.2	-	-	8.2	-	7.93	8.4	7.2	6	5	4	4		
23	B.O.D.	mg/1	-	-	-	-	1.6	-	-	2	-	-	2.1	-	1.90	2.1	1.6	2	3	4			
24	C.O.D.	mg/1	-	-	-	-	10	-	-	20	-	-	9.6	-	13.20	20.0	9.6						
25	Sodium	mg/1	-	-	-	-	-	-	-	15.74	-	-	16.2	-	15.97	16.2	15.7						
26	Potassium	mg/1	-	-	-	-	14.6	-	-	1.14	-	-	1.2	-	5.65	14.6	1.1						
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	70	-	-	-	-	70.00	70.0	70.0	50	500	5000			
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	<2	-	-	-	-	-	-	-						
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Cat.			-	-	-	-	A	-	-	-	-	-	B	-	A	-	-						

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2017-2018

Natural Water Resource : Tawa dam. (Distt.- Hoshangabad)

Discription of Sample Station : Near chanal no.2, Tawanagar, Itarsi.

Lying in cat. A

Lying in B

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling						26.08.17			31.11.17			22.2.18		-	-	-					
2	Appearance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	18	-	18.00	18.0	18.0					
4	Turbidity	NTU	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
5	Colour	PCS	-	-	-	-	Colorless	-	-	-	-	-	Colorless	-	-	-	-	10	300	300		
6	Odour	T. No	-	-	-	-	Odourless	-	-	-	-	-	Odourless	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	-	-	-	-	8.21	-	-	-	-	-	8.21	-	8.21	8.2	8.2	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	-	-	-	-	252	-	-	-	-	-	252	-	252.00	252.0	252.0					
9	T. Solids	mg/1	-	-	-	-	246	-	-	-	-	-	166	-	206.00	246.0	166.0					
10	D. Solids	mg/1	-	-	-	-	232	-	-	-	-	-	142	-	187.00	232.0	142.0	500		1500		2100
11	S. Solids	mg/1	-	-	-	-	14	-	-	-	-	-	24	-	19.00	24.0	14.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	-	BDL	-	#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-	-	-	BDL	-	-	-	-	-	BDL	-	#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-	-	-	1.25	-	-	-	-	-	1.15	-	1.20	1.3	1.2	20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	0.35	-	-	-	-	-	0.56	-	0.46	0.6	0.4					
16	Chloride	mg/1	-	-	-	-	28.57	-	-	-	-	-	23.56	-	26.07	28.6	23.6	250		600		600
17	Sulphate (SO ₄)	mg/1	-	-	-	-	6.8	-	-	-	-	-	6.75	-	6.78	6.8	6.8	400		400		1000
18	T. Alkalinity	mg/1	-	-	-	-	174	-	-	-	-	-	152	-	163.00	174.0	152.0					
19	T. Hardness	mg/1	-	-	-	-	148	-	-	-	-	-	146	-	147.00	148.0	146.0	300				
20	Calcium Hardness	mg/1	-	-	-	-	114	-	-	-	-	-	114	-	114.00	114.0	114.0	200				
21	Magnesium H.	mg/1	-	-	-	-	34	-	-	-	-	-	32	-	33.00	34.0	32.0	100				
22	D. Oxygen	mg/1	-	-	-	-	8.5	-	-	-	-	-	8.1	-	8.30	8.5	8.1	6	5	4	4	
23	B.O.D.	mg/1	-	-	-	-	-	-	-	-	-	-	2.4	-	2.40	2.4	2.4	2	3	4		
24	C.O.D.	mg/1	-	-	-	-	1.8	-	-	-	-	-	9.6	-	5.70	9.6	1.8					
25	Sodium	mg/1	-	-	-	-	15.2	-	-	-	-	-	16.2	-	15.70	16.2	15.2					
26	Potassium	mg/1	-	-	-	-	1	-	-	-	-	-	1.1	-	1.05	1.1	1.0					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	Cat.		-	-	-	-	A	-	-	-	-	-	B	-	B	-	-					

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Contonment Area Pachmarhi

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2016-2017																						
Natural Water Resource : Contonment Area Nalla Pachmari.																						
Natural Water Resource : Contonment Nalla.																	Lying in category		A			
Description of Sampling Station : Contonment Nallah at Pachmari.																	Lying in		B			
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		DRY				DRY		24.08.16			24.01.17		-	-	-	-					
2	Appearance		-	-	-	-	-	-		-	-		-	-								
3	Temperature	oC	-	-	-	-	-	-		-	-		-	-								
4	Turbidity	NTU	-	-	-	-	-	-		-	-		-	-								
5	Colour	PCS	-	-	-	-	-	-		-	-		-	-				10	300	300		
6	Odour	T. No	-	-	-	-	-	-		-	-		-	-				Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	-	-	-	-	-	-	7.98	-	-	7.76	-	-	7.87	7.8	8.0	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	-	-	-	-	-	-		-	-		-	-								
9	T. Solids	mg/1	-	-	-	-	-	-	546	-	-	884	-	-	715.00	546.0	884.0	500				
10	D. Solids	mg/1	-	-	-	-	-	-	506	-	-	828	-	-	667.00	506.0	828.0			1500		2100
11	S. Solids	mg/1	-	-	-	-	-	-	40	-	-	56	-	-	48.00	40.0	56.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	-	-		-	-		-	-								
13	Nitrite Nitrogen	mg/1	-	-	-	-	-	-		-	-		-	-								
14	Nitrate Nitrogen	mg/1	-	-	-	-	-	-		-	-		-	-				20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	-	-		-	-		-	-								
16	Chloride	mg/1	-	-	-	-	-	-	39.42	-	-	44.34	-	-	41.88	39.4	44.3	250		600		600
17	Sulphate (SO ₄)	mg/1	-	-	-	-	-	-		-	-		-	-				400		400		1000
18	T. Alkalinity	mg/1	-	-	-	-	-	-		-	-		-	-								
19	T. Hardness	mg/1	-	-	-	-	-	-		-	-		-	-				300				
20	CalciumHardness	mg/1	-	-	-	-	-	-		-	-		-	-				200				
21	Magnesium H.	mg/1	-	-	-	-	-	-		-	-		-	-				100				
22	D. Oxygen	mg/1	-	-	-	-	-	-		-	-		-	-				6	5	4	4	
23	B.O.D.	mg/1	-	-	-	-	-	-	10	-	-	12	-	-	11.00	10.0	12.0	2	3	4		
24	C.O.D.	mg/1	-	-	-	-	-	-	60	-	-	69.16	-	-	64.58	60.0	69.2					
25	Sodium	mg/1	-	-	-	-	-	-		-	-		-	-								
26	Potassium	mg/1	-	-	-	-	-	-		-	-		-	-								
27	T. Coliform	MPN/100ml	-	-	-	-	-	-		-	-		-	-				50	500	5000		
28	F. Coliform	MPN/100ml																				
29	T.K.N.	mg/1																				
29	T.K.N.	mg/1																				

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.
Water Quality during Year - 2017-2018

Natural Water Resource : Contonment Area Nallah, Pachmarhi.

Lying in category

A

Description of Sampling Station : Contonment Area Nallah Water, Pachmarhi

Lying in

B

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		19.1.17	-	-	-	28.08.17	-	-	-	-	29.1.18	-	-	-	-	-					
2	Appearance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-	26°C	-	-	-	-	25°C	-	-	-	-	-					
4	Turbidity	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
5	Colour	PCS	Colorless	-	-	-	Colorless	-	-	-	-	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	Odourless	-	-	-	Odourless	-	-	-	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTI ONABLE			
7	pH	pH Unit	8.26	-	-	-	7.92	-	-	-	-	7.56	-	-	7.74	7.9	7.6	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	216	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
9	T. Solids	mg/1	198	-	-	-	664	-	-	-	-	846	-	-	755.00	846.0	664.0	500				
10	D. Solids	mg/1	186	-	-	-	612	-	-	-	-	734	-	-	673.00	734.0	612.0			1500		2100
11	S. Solids	mg/1	12	-	-	-	52	-	-	-	-	112	-	-	82.00	112.0	52.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
13	Nitrite Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
14	Nitrate Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
16	Chloride	mg/1	41.39	-	-	-	46.31	-	-	-	-	48.8	-	-	47.56	48.8	46.3	250		600		600
17	Sulphate (SO ₄)	mg/1	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400		400		1000
18	T. Alkalinity	mg/1	154	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
19	T. Hardness	mg/1	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300				
20	Calcium Hardness	mg/1	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200				
21	Magnesium H.	mg/1	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100				
22	D. Oxygen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	4	4	
23	B.O.D.	mg/1	0.8	-	-	-	6	-	-	-	-	6	-	-	6.00	6.0	6.0	2	3	4		
24	C.O.D.	mg/1	9.8	-	-	-	30	-	-	-	-	28.8	-	-	29.40	30.0	28.8					
25	Sodium	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
26	Potassium	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

MSW Ground water

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2016-2017																						
Natural Water Resource : Ground water. Pachmarhi													Lying in category A									
Description of Sampling Station : Near MSW Site, Pachmarhi, (Hoshangabad)													Lying in B									
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		-	-								24.01.16	-		-	-	-					
2	Appearance											Clear			-	-	-					
3	Temperature	oC													-	-	-					
4	Turbidity	NTU										6			6.00	6.0	6.0					
5	Colour	PCS										CL			-	-	-	10	300	300		
6	Odour	T. No										OL			-	-	-	Unobjecti onable	UNOBJECTI ONABLE			
7	pH	pH Unit										7.56			7.56	7.6	7.6	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.										536			536.00	536.0	536.0					
9	T. Solids	mg/1										350			350.00	350.0	350.0					
10	D. Solids	mg/1										342			342.00	342.0	342.0	500		1500		2100
11	S. Solids	mg/1										8			8.00	8.0	8.0					
12	Amm. Nitrogen	mg/1										0.018			0.02	0.0	0.0					
13	Nitrite Nitrogen	mg/1										BDL										
14	Nitrate Nitrogen	mg/1										2.74			2.74	2.7	2.7	20		50		
15	Phosphate (PO ₄)	mg/1										0.016			0.02	0.0	0.0					
16	Chloride	mg/1										71.44			71.44	71.4	71.4	250		600		600
17	Sulphate (SO ₄)	mg/1										29.36			29.36	29.4	29.4	400		400		1000
18	T. Alkalinity	mg/1										184			184.00	184.0	184.0					
19	T. Hardness	mg/1										190			190.00	190.0	190.0	300				
20	Calcium Hardness	mg/1										112			112.00	112.0	112.0	200				
21	Magnesium H.	mg/1										78			78.00	78.0	78.0	100				
22	D. Oxygen	mg/1																6	5	4	4	
23	B.O.D.	mg/1										102			102.00	102.0	102.0	2	3	4		
24	C.O.D.	mg/1										10			10.00	10.0	10.0					
25	Sodium	mg/1										26.32			26.32	26.3	26.3					
26	Potassium	mg/1										1.2			1.20	1.2	1.2					
27	T. Coliform	MPN/100ml										110			110.00	110.0	110.0	50	500	5000		
28	F. Coliform	MPN/100ml										<2										
29	T.K.N.	mg/1													-	-	-					

DRAFT ZONAL MASTER PLAN REPORT

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2017-2018

Natural Water Resource

: Ground water. Pachmarhi

Lying in category A

Description of Sampling Station : Near MSW Site, Pachmarhi, (Hoshangabad)

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E	
1	Date of Sampling			-			28.8.17					-	-		-	-	-						
2	Appearance						Clear								-	-	-						
3	Temperature	oC					25°C								-	-	-						
4	Turbidity	NTU					-								#DIV/0!	#DIV/0!	#DIV/0!						
5	Colour	PCS					Colorless								-	-	-	10	300	300			
6	Odour	T. No					Odourless								-	-	-	Unobjecti onable	UNOBJECTI ONABLE				
7	pH	pH Unit					7.86								7.86	7.9	7.9	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5	
8	Sp. Conductivity	µMhos/cm.					-								#DIV/0!	#DIV/0!	#DIV/0!						
9	T. Solids	mg/1					264								264.00	264.0	264.0	500					
10	D. Solids	mg/1					250								250.00	250.0	250.0			1500		2100	
11	S. Solids	mg/1					14								14.00	14.0	14.0						
12	Amm. Nitrogen	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!						
13	Nitrite Nitrogen	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!						
14	Nitrate Nitrogen	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!	20		50			
15	Phosphate (PO ₄)	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!						
16	Chloride	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!	250		600		600	
17	Sulphate (SO ₄)	mg/1					6.25								6.25	6.3	6.3	400		400		1000	
18	T. Alkalinity	mg/1					194								194.00	194.0	194.0						
19	T. Hardness	mg/1					162								162.00	162.0	162.0	300					
20	CalciumHardness	mg/1					32								32.00	32.0	32.0	200					
21	Magnesium H.	mg/1					32								32.00	32.0	32.0	100					
22	D. Oxygen	mg/1					-											6	5	4	4		
23	B.O.D.	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!	2	3	4			
24	C.O.D.	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!						
25	Sodium	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!						
26	Potassium	mg/1					-								#DIV/0!	#DIV/0!	#DIV/0!						
27	T. Coliform	MPN/100ml					-								#DIV/0!	#DIV/0!	#DIV/0!	50	500	5000			
28	F. Coliform	MPN/100ml					-								#DIV/0!	#DIV/0!	#DIV/0!						
29	T.K.N.	mg/1					-								-	-	-						

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.

Water Quality during Year - 2018-2019

Natural Water Resource : Ground water. Pachmarhi

Description of Sampling Station : Near MSW Site, Pachmarhi, (Hoshangabad)

Lying in category A

Lying in B

S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		18.04.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
2	Appearance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
4	Turbidity	NTU	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
5	Colour	PCS	Colorless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	Odourless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unobjecti onable	UNOBJECTI ONABLE			
7	pH	pH Unit	7.61	-	-	-	-	-	-	-	-	-	-	-	7.61	7.6	7.6	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	263	-	-	-	-	-	-	-	-	-	-	-	263.00	263.0	263.0					
9	T. Solids	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	500				
10	D. Solids	mg/1	173	-	-	-	-	-	-	-	-	-	-	-	173.00	173.0	173.0			1500		2100
11	S. Solids	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
12	Amm. Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
13	Nitrite Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!					
14	Nitrate Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	20		50		
15	Phosphate (PO ₄)	mg/1	0.013	-	-	-	-	-	-	-	-	-	-	-	0.01	0.0	0.0					
16	Chloride	mg/1	38.2	-	-	-	-	-	-	-	-	-	-	-	38.20	38.2	38.2	250		600		600
17	Sulphate (SO ₄)	mg/1	11.8	-	-	-	-	-	-	-	-	-	-	-	11.80	11.8	11.8	400		400		1000
18	T. Alkalinity	mg/1	42	-	-	-	-	-	-	-	-	-	-	-	42.00	42.0	42.0					
19	T. Hardness	mg/1	90	-	-	-	-	-	-	-	-	-	-	-	90.00	90.0	90.0	300				
20	CalciumHardness	mg/1	72	-	-	-	-	-	-	-	-	-	-	-	72.00	72.0	72.0	200				
21	Magnesium H.	mg/1	18	-	-	-	-	-	-	-	-	-	-	-	18.00	18.0	18.0	100				
22	D. Oxygen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	4	4	
23	B.O.D.	mg/1	1.5	-	-	-	-	-	-	-	-	-	-	-	1.50	1.5	1.5	2	3	4		
24	C.O.D.	mg/1	57.6	-	-	-	-	-	-	-	-	-	-	-	57.60	57.6	57.6					
25	Sodium	mg/1	5.29	-	-	-	-	-	-	-	-	-	-	-	5.29	5.3	5.3					
26	Potassium	mg/1	0.42	-	-	-	-	-	-	-	-	-	-	-	0.42	0.4	0.4					
27	T. Coliform	MPN/100ml	90	-	-	-	-	-	-	-	-	-	-	-	90.00	90.0	90.0	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Jatashankar Nalla

REGIONAL OFFICE, MADHYA PRADESH POLLUTION CONTROL BOARD, BHOPAL.																						
Water Quality during Year - 2017-2018																						
Natural Water Resource : Jatashankar Nallah, Pachmarhi.																Lying in A						
Description of Sampling Station : Jatashankar Nallah Water, Pachmarhi																						
S.No.	Characteristic	Unit	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	March	Av.	Maxi.	Mini.	A	B	C	D	E
1	Date of Sampling		19.1.17				28.08.17					29.1.18										
2	Appearance		-	-	-	-	26°C	-	-	-	-	-	-	-	-	-	-					
3	Temperature	oC	-	-	-	-		-	-	-	-	25°C	-	-	-	-	-					
4	Turbidity	NTU	-	-	-	-	Colorless	-	-	-	-	-	-	-	-	-	-					
5	Colour	PCS	Colorless	-	-	-	Odourless	-	-	-	-	-	-	-	-	-	-	10	300	300		
6	Odour	T. No	Odourless	-	-	-	7.46	-	-	-	-	-	-	-	-	-	-	Unobjectionable	UNOBJECTIONABLE			
7	pH	pH Unit	7.64	-	-	-		-	-	-	-	6.84	-	-	6.84	6.8	6.8	6.5 to 8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-8.5
8	Sp. Conductivity	µMhos/cm.	-	-	-	-	824	-	-	-	-	-	-	-	-	-	-					
9	T. Solids	mg/1	926	-	-	-	460	-	-	-	-	674	-	-	567.00	674.0	460.0	500				
10	D. Solids	mg/1	862	-	-	-	64	-	-	-	-	606	-	-	335.00	606.0	64.0			1500		2100
11	S. Solids	mg/1	64	-	-	-	-	-	-	-	-	68	-	-	68.00	68.0	68.0					
12	Amm. Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
13	Nitrite Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
14	Nitrate Nitrogen	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20		50		
15	Phosphate (PO ₄)	mg/1	-	-	-	-	51.24	-	-	-	-	-	-	-	-	-	-					
16	Chloride	mg/1	58.14	-	-	-	-	-	-	-	-	42.37	-	-	42.37	42.4	42.4	250		600		600
17	Sulphate (SO ₄)	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400		400		1000
18	T. Alkalinity	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
19	T. Hardness	mg/1	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300				
20	CalciumHardness	mg/1	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200				
21	Magnesium H.	mg/1	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100				
22	D. Oxygen	mg/1	8.2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	6	5	4	4	
23	B.O.D.	mg/1	4.9	-	-	-	40	-	-	-	-	4	-	-	22.00	40.0	4.0	2	3	4		
24	C.O.D.	mg/1	48.2	-	-	-	-	-	-	-	-	19.2	-	-	19.20	19.2	19.2					
25	Sodium	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
26	Potassium	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
27	T. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	500	5000		
28	F. Coliform	MPN/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
29	T.K.N.	mg/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
 Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Annexure 2.2 : Submitted letters for Data Collection

SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone : +91-7567198158
kjoshi1@systra.com

To,
The Director General, *Executive Director,*
Environmental Planning and Coordination
Organization (EPCO),
Bhopal, Madhya Pradesh – 462016

/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of Information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

For,
Karn K. Joshi

Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)

AS
25-6-19

Encl: List of Information and / or data required

SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company

Regd. Office : Block-A • SAI House • Satyam Corporate Square • B/h. Rajpath Club • Bodakdev • Ahmedabad - 380059 • INDIA
Phone : +91-79-6614 2600 | E-mail : mail.sai@systra.com | Web : www.saiindia.com | CIN : U74140G110823TC000000

SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone : +91-7567198158
kjoshi1@systra.com

To,

General Manager
District Industry
& Trade Centers
Hoshangabad

/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of Information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

For


Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)

Encl: List of Information and / or data required

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Phone : +91-79-6614 2600 | E-mail : mail_sai@systra.com | Web : www.saiindia.com | CIN : U72140G11983PTCO05900



SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone : +91-7567198158
kjoshi1@systra.com

To,
~~The Chief Secretary,~~ Member Secretary,
Madhya Pradesh State Biodiversity Board
Bhopal, Madhya Pradesh

25/06/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of Information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

F.s,



Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)



Encl: List of Information and / or data required

SAI Consulting Engineers Pvt. Ltd.

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Phone : +91-79-6614 2600 | E-mail : mail_sai@systra.com | Web : www.saiengineers.com | Fax : +91-79-6614 2601

SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Pig/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone: +91-7567198158
kjoshi1@systra.com

To,

Tehsildar
Sohagpur

2/07/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Pig/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

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We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)

Encl: List of Information and / or data required

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SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone: +91-7567198158
kjoshi1@systra.com

To,
The commissioner,
Directorate of Archeology,
Archives & Museum,
Bhopal, Madhya Pradesh.

27/06/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

Karn K. Joshi
27/6/19

Karn K. Joshi
Karn K. Joshi

Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)

Encl: List of information and / or data required

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Phone : +91-79-6614 2600 | E-mail : info@saiconsulting.com

SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone : +91-7567198158
kjoshi1@systra.com

To,
The Director, / Regional Officer,
Madhya Pradesh Pollution Control Board,
Bhopal, Madhya Pradesh - 462016

/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of Information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

Rt.

Parvati Vaid

Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)



Encl: List of Information and / or data required

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SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone : +91-7567198158
kjoshi1@systra.com

To,
The Field Director,
Satpura Tiger Reserve,
Hoshangabad.

/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,



Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)

Encl: List of Information and / or data required

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Phone : +91-79-6614 2600 | E-mail : mail.sai@systra.com | Web : www.saiindia.com | GSM : 91711401108307000000

List of data	
Department	Data List
Forest Department	Location wise types and kinds of forests
	Location and Extent Wildlife Corridors - Blue and Green
	Denuded Areas
	Service Industries, agro based industries, cottage industries, processing, agriculture, floriculture, horticulture areas and storage of agro based products, Forest Products
	Location and Legality of Mining, Saw mills and Brick kilns
	10 year Management Plan
	No. of Incidences and Areas of Casualties and Retaliation of Animals, Cattle and Humans
	Type & No. of accidents/Casualties (Rail, Road, Electrocutation, Blind wells, poisoning etc.)
	Location & No. of Poaching Incidents of perticular animals
	Location and No. of Blind wells
	Cattle Vaccination done in last 5 years, History of epidemic diseases
	Extent and Legality of Cattle Grazing in ESZ
	Location of Forest Fire in ESZ in last 5-10 years, Fire sensitive spots
	Encroachment Status
	Location of Naka/Chowki, watch towers and manpower deployed
	Type of equipments (fire, Medicines, Cage, dart gun, rescue vehicle available at each Naka/Chowki)
	Existance of Boundary Pillars
	Location, types and status Weed and grassland
	No. of Eco Development Committee/ Village-forest Protection & management Committee in ESZ
	Location and Activity for Eco Tourism & Recreation (water sport activity, rest house, jungle safari etc.)
	Awareness Programs, skill developemnt programs, Adgriculture development or any other initiatives taken in the area by Department or government
	Past, On going and future Infrastructure development/ provision done by department
	Report : Bio-diversity Conservation and rural livelihood Improvement Project by PEACE consortium, 2017
	Forest Interpretation Centres
	Village boundaries of respective villages notified under Eco sensitive zone



SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Field Director,
Satpura Tiger Reserve,
Hoshangabad, Madhya Pradesh

01/07/2019

Subject: Requesting forest departmental support regarding accompaniment of officer and accommodation for site visit/survey exercise to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is assign the task of preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, as a part of Site visit and survey exercise planned on first week of July, we would request you to kindly allow/assign an officer/person to accompany us for the better insight along with the accommodation at forest Rest House and other logistics support for a couple of days as per convenience.

Thank you in advance for your co-operation, valuable time and help.

With Regards,



Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)





SAI Ref: [SAI/BAUP219009/HO/0996/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)
Phone : +91-7567198158
kjoshi1@systra.com

To,
The Tehsiladar,
Pipariya, Hoshangabad,
Madhya Pradesh.

04/07/2019

Subject: Data required to prepare Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Reference: Work order issued by Madhya Pradesh Tourism Board vide letter no. 918/Plg/MPTB dated 2nd March 2019 to prepare the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh

Respected Sir,

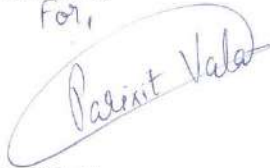
We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from Madhya Pradesh Tourism Board (MPTB) as referenced above. It is the time bound project and timeline is highly stipulated to complete the work.

Hence, to prepare these Zonal Master Plans and Sub-Zonal Tourism Master Plans, we require certain information and / or data (Soft / hard copy) from your department. List of Information and / or data is attached with this letter for your reference further.

We request you to kindly provide us these information and / or data at the earliest.
Thank you in advance for your co-operation, valuable time and help.

With Regards,

For,



Karn K. Joshi
Team Leader
Sai Consulting Engineers Pvt. Ltd. (Systra Group)

Encl: List of Information and / or data required



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Phone : +91-79-6614 7501 E-mail : info@systra.com



SAI Ref: [SAI/BAUP219009/HO/1613/2019]
MPTB Ref: [918/Plg/MPTB dated 02/03/2019]
From:
Pariksit L. Vala
SAI Consulting Engineers Pvt. Ltd. (Systra Group)
Phone: +91-9725858258
pvala1@systra.com

To,
The Field Director,
Satpura Tiger Reserve,
Hoshangabad, Madhya Pradesh

July 02, 2019

Subject: Preparation of Zonal Master plan and Sub-Zonal tourism Master Plan for the Satpura Tiger Reserve Area: Minutes of meeting (MOM)

Dear Sir,

With reference to the meeting held between Team of SAI Consulting Engineers Pvt. Ltd. and Field Director of Satpura Tiger Reserve, on July 1, 2019 at the office of Field Director, Satpura Tiger Reserve, Hoshangabad, we have prepared minutes of meeting for the concerned points and discussion on the project. Which is enclosed hereby for your ready reference.

With regards,
For, SAI Consulting Engineers Pvt. Ltd.


Pariksit L. Vala
[Urban Planning & SEZ]



Copy to: The Director, Madhya Pradesh Tourism Board for reference

Encl.: Minutes of meeting attached for reference.

SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company

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Preparation of ZMP for ESZ for Cluster 4 MP - Minutes of the Meeting













Subject	Minutes of the Meeting for Preparation of Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh	
Meeting Date	01 st July 2019	
Place	Office of Field Director, Satpura Tiger Reserve, Hoshangabad, Madhya Pradesh	
Participants	<i>From Stakeholder</i>	<i>From SAI Consulting Engineers Pvt. Ltd.</i>
	Mr. S. K. Singh, Field Director, STR	Mr. Pariksit L. Vala, Sr. GIS Analyst
	Mr. A. K. Shukla, Dy. Director, STR	Mr. Kewal Rana, Urban Planner
	Mr. Churamani Mishra, Forest Guard	Mr. Jash Goswami, Trainee Urban Planner
	Mr. Ashish Soni, GIS Specialist	Mr. Lucky Soni, Intern Urban Planner
The meeting was held under the chairmanship of the Field Director, Satpura Tiger Reserve for discussion on the Preparation of Eco-Sensitive Zone boundary, Satpura Tiger Reserve.		
S. No.	Points Discussed/suggestions made	
1.	Team of SAI Consulting Engineers Pvt Ltd – A Systra group Company visited Satpura Tiger Reserve office on 10/07/2019 at Hoshangabad. And had a fruitful discussion with The Field Director along with other staff of Satpura Tiger Reserve regarding preparation of Zonal Master plan and Sub-Zonal Tourism Master Plan for the Satpura Tiger Reserve Area.	
2.	A brief introduction about the work plan, the methodology adopted, and the current status of work of the project was discussed. The current status included the site visit to the various tourist places (i.e., both potential and listed one's) and the primary survey for understanding the profile, characteristics, opportunities, issues and challenges of various villages as well as the forest area coming under Satpura Tiger Reserve Area.	
3.	The discussion pointed towards the difficulties faced regarding the mismatch of area obtained from ESZ layer shapefile given by the Satpura Tiger Reserve forest department and the area mentioned in the Central Government Gazette notification S.O. 2538(E), dated 9th August,2017. The differences in delineation of the Eco Sensitive Zone boundary resulted in difficulty of locating some of the notified villages (It was studied during field visit that latitude and longitude of some villages are not matching with the same given in said notification). Moreover, Team of SAI Consulting discussed the Core boundary, Buffer Boundary and boundary of Eco-sensitive zone of Satpura tiger reserve prepared according to the map shown in notification, data received from State IT department and other data received from the Satpura Tiger Reserve. In this regards, when some discrepancies found between the actual boundaries and map prepared through the said notification, the Field Director explained the criteria deciding the boundaries and assured team of SAI consulting to provide final core boundary, buffer boundary and Eco-sensitive boundary of Satpura Tiger Reserve in GIS format within 10 days.	
4.	It was pointed out by the authority that in case if any village is partially lying under the ESZ, then only that portion must be considered and not the entire administrative boundary of village.	
5.	One of the concerned point discussed in meeting is to finalise the boundary of Eco-sensitive Zone and delineate the study area for this project.	

Preparation of ZMP for ESZ for Cluster 4 MP - Minutes of the Meeting

6.	Expert insight was delivered by Field Director (STR) on Van Patta (forest land parcel) allotted to the villagers, its brief description of the permitted & regulated activities and problems faced related their livelihood.
7.	The list of required data was submitted on 30th June, 2019 on the same lines of which we had an interaction on the same day.

The meetings ended with vote of thanks.

Annexure 2.3 : Attendance Sheet of visited departments & villagers






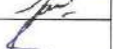





STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Occupation	Village	Contact No.	Signature
1	25/7/19	R. S. Thakur	R.A.E.O.	Kesla	97772085383	
2	25/7/19	MUKESH SENSAR	Reliance Foundation	Pipariya	9755038656	
3	25/07/19	Chandh Venu	- - -	Tansi	7024264512	
4	25/7/19	Allesh Khatun	NRLD Kesla	Kesla	8349901547	
	25/7/19	बंशु देव	देवपुर पट्टा	देवपुर		
				एरिया	9479653046	
				दिलोदा/बोरी		
5	25/7/19	संजीव शर्मा	प्रकार	बोरिया	9424841159	
6		अशोक शर्मा	अध्यापक	मन्दा	9425646550	
7	29/07/19	R. Vishwakarma	Block Manager	Ripariya	8349901749	
8	31/7/19	EDNAED CHAKHAN	PROB MANAGER WOOD VISION	SOHAPUR	9422155820	
9	1.8.19	Pappu. Khan	अधीक्षक	मन्दा	9424472121	
10	1.8.2019	S.M. DevDa	व.र. सिकर प्रशासक	सिकर	9406944332	
11	8.8.19	Mr. Aashish Shekhar	DDM-HELUM	Hoshangabad	9406809801	

STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Occupation	Village	Contact No.	Signature
		कमल सिंग उइके	आभाषिक कार्यकर्ता	प्राजद माल	9009648148	
	02/08/19	सतराम त्वापति	MPSRLN-Jamai	-	8349901738	
	--	मिरोप दिवान	--	-	9109980592	
	--	मोरीन अलकत	--	-	8349901346	
		एल.के. खिलारी	MAO	मुन्नासरा	9424396589	




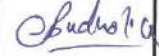




STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Designation	Department	Contact No.	Signature
1	31.07.19	Mrs Bandy Sujjwanshi	CEO JP Sohagpur	Tanpad Panchayat soh	9111542448	<i>[Signature]</i>
2	6.8.19	Pawan Kumar Rai	CEO SADA Pachmarhi	--	9425482044	<i>[Signature]</i>






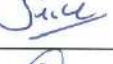

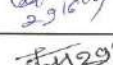

STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Occupation	Village	Contact No.	Signature
1						
2.	25/07/19	Raju Yadav	Sachiv	Jhunkar, Daudi	9009577649	<i>[Signature]</i>
3.	25/07/2019	Mukesh Kumar Pathniya	Sachiv	Barabari	9098221206	<i>[Signature]</i>
4	25/7/2019	Ammudal yadav	Sachiv	Silwanji	9617009698	<i>[Signature]</i>
5.	25/7/19	Asbale Kumar Sabbe	Sachiv	P. Kala	9607269161	<i>[Signature]</i>
6.	25/7/19	Kanhariya Patte	कर्मचारी	Pipariyakala	9479381394	<i>[Signature]</i>
7.	25/07/19	Rajesh Bakriya	GRS	Jhunkar Daudi	9009670290	<i>[Signature]</i>
8	25/07/19	Vilash Barasker	GRS	Bhargada	8435946874	<i>[Signature]</i>
9	26/07/19	Dinesh Bhargava	शिक्षक	Kali, Punji	9009228070	<i>[Signature]</i>
5.	28/7/19	madhu Gorav	Teacher	Ghogharimatha	9575047838	<i>[Signature]</i>
6.	29/7/19	Dalchand Sharma	Teacher	ghogharimatha	6265784133	<i>[Signature]</i>
7.	29/7/19	Anubhav Javariya	Sarpanch	Manrikala	913107140	<i>[Signature]</i>
8	30/7/19	Umrausingh Pathariya	Teacher	Shota	7389685960	<i>[Signature]</i>

STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Occupation	Village	Contact No.	Signature
1.	22/7/19	Alok Daryale Sr. Executive Officer (BRD)	Sr. Executive Officer EPCO, Bhopal		982717128	
2.	22/7/19	Rajesh Kulkarni Ex. Engineer	EPCO, E-S, Awar Colony	Bhopal	9826065524	





STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Designation	Department	Contact No.	Signature
1	23/7/19	Jaimon Mathew	General Manager (operations)	Operations/IT/store	9424796769	
2	23/7/19	mas Asha marya	bolck education			
3	23/7/19	-	officer/kes/9	TWD	9427541784	
4		नरेश शर्मा	AD ACTW	TWD	7047393219	
5	26/7/19	Shalagh Key	PO - Away	Rd.	9424978222	
6	27/7/19	डीपि वरकडे	DC SBM	R-S	9425048190	
7	26-7-19	अरुण कुमार	P.O. मनरेगा	मनरेगा (Rd)	9826079759	
8	29.7.19	Rajesh Tiwari	B.P.O	Bunchayat	9826767903	
9		अशोक पाठे	सचिव	डेप्युटी	9424436698	
10		बसन्त पाठे	सचिव	कर्मचारी	9424436698	
11		कमलेश्वर राम	सचिव	निर्माण	9424326180	
12		राजेश कुमार	सचिव	कुर्सीवना	9406743979	



STAKEHOLDER CONSULTATION						
Sr. No.	Date	Name	Occupation	Village	Contact No.	Signature
1	1/8/2019	C. L. Ahirwal	CFO, Jampad Tamiã	Tamiã	9279835914	[Signature]
2	1/8/2019	Devendra Bhande	BM SRMP/Tamiã	Tamiã	9109980580	[Signature]
03	3/8/2019	Chhama PRAKASH RAI Sachiv	Sachiv g. P. RAMUN	DONGA	9424326180	[Signature]
04	03/08/19 03/08/19	Bhagirathi Ukey (Sachiv) बनस माल	Sachiv Delakhari -RAI	Aanlandhana मयूर-मयूर	9424947469 924960578	[Signature]
5	03/08/19	RAMESH SAHU	Deputy (Cordon Forest Product)	Tamiã	9424749247 7024450041	[Signature]
6	03/08/19	Faram Golusav TRADESI	Delakhari	Tamiã	9955494003	A. Rai
7	03/08/19	Anci + Rai	Delakhari	Tamiã	9955494003	A. Rai
8	05/08/19	PARASRAM DHURU	गुल्ले बिक्रे	JHAPA	9479865696	[Signature]

Stakeholder Consultation						
Sr. No.	Date	Name	Designation	Department	Remarks	Sign
1	29/06/19	Yogendra K. Bala	Asstt. director Agriculture	Agriculture	—	
2	29/06/19	DR. Sejj Agr	Adl. Dejt. Direct Utt. Semu.	Pasupul -	.	
3	29/6/19	T. R. Kumrey	A.S.O.	District Planning office H. head.	911023122	
4.	29/6/19	Virek Budhonia	ADM(CT)	NRIM	8770183458	
5.	29/6/19	Anup Khalkho	Po zila Panchayat Hbad	DRDA	9977272355	
6	02/07/2019	K. R. Anthonze	P.C.O. J. P. Sohagpur	Panchayat R. d.	9926440581	
7.	02/07/2019	Ashwini Golig	Nayab Faisildar Sohagpur	Revenue Department	9644794580	
8	04/07/19	M. K. BAIRAGI	B.P.O.	PANCHAYAT	9424972151	

Stakeholder Consultation						
Sr. No.	Date	Name	Designation	Department	Remarks	Sign
1	24/6/19	M. K. Mandra	S. E.	M. P. P. C. B. Board		
2	24/6/19	Dr. Elizabeth Thomas	Asstt. Member Secretary	MP State Biodiversity Board		
3	20/6/19	Asun Rai	Project Manager	MP. Eastern In Development Board.		
4	26/6/19	Puneer Chatterjee	Dir. of Green Adventure	Adventure		
5	26/6/19	Dr. Shashikant Dhanoojiy	Assistant Geohydrologist	Ground Water Survey, WRD, Bhopal		
6	26/6/19	Dr. Amit Gajbhiye	Jt. Director T & C			
7	27.6.19	S.S. Chadoria 9425120153	SDO Forest, Bhopal	Forest Department.		
8	29/6/19	Smt Chandrakanta Sanyal	Assistant Commissioner Tribal Affairs HBD	Tribal Affairs HBD	9425832691 9644943880	
9	29/06/19	Ms. Jyoti Gupta	manager DTIC HBD	DTIC HBD	7224805768	

Stakeholder Consultation						
Sr. No.	Date	Name	Designation	Department	Remarks	Sign
1	20-6-2019	Ranjit Singh	Doctor	Self-employed Ranipur Village.	9406525432	Ranjit Singh
2	30/6/2019	Kanhaiya Patel	Gen. Officer	Dist. Office	94793 81394	K Patel
3	30/6/2019	पिंजरा	Self employed	Son of Sarpanch	-9406937534 -6260361089	V. Day
4	30/6/2019	रामनाथ ठाकुर	Panch	Junkar	6263251921	Ramath
5	30/06/2019	राजेश्वर मेहता	सहा. कमिश्नर	डुमकर	9009670290	Rajeshwar
6	30/6/2019	शंकर मेहनवशी	डुकोना	डुमकर	6264768720	Shankar
7	1/7/2019	अमलेश कालडे	12 A -	लुधिया	9425311418 9424815278	Amlesh
8		सुन्दर बालासाहेब	सेलम डिप्टी लिवर	बोवरी		Sunder
9		सरदार सकाम	डिप्टी लिवर	बोवरी		Sardar
10		राधुमा रघु	स्टूडेंट	बोवरी	6263932191 9407174858	Radhuma
11		Ram Lal	Farmer	Urdan	7648908579	Ram Lal
12		Sunil bhati	Daily labour	Urdan	9406828622	Sunil

Stakeholder Consultation						
Sr. No.	Date	Name	Designation	Department	Remarks	Sign
1.	25/06/19	Rajesh Sharma	Sr. Programmer	Mineral Resource Dept.	not	
	26-06-19	H.H. Verma	Asst. Statistical Officer	Directorate of Fisheries		
2.	27/06/19	Ashutosh Upadhyay 9826364245	Archaeologist	Archaeological Survey of India	—	
3.	27/6/19	Shobha Badwala	Asst. Archaeologist	ASI, Bhopal Circle	—	

Stakeholder Consultation						
Sr. No.	Date	Name	Designation	Department	Remarks	Sign
	03-07-2019	Smt Trupti Patena	Taksildar/Insi	Revenue.	Excellent work.	
	04-07-2019	Rajeev Khatke	Tahsildar	pipariya. Rev.	Excellent work	

Primary consultation and discussion with the stakeholders and NGOs regarding Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve during site visit

Subject	Minutes of the Meeting for stakeholder’s consultation of baseline assessment study for Preparing Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve and Pench Tiger Reserve) of Madhya Pradesh	
Meeting Date	19 th November 2019	
Place	The Hotel Palash, Bhopal, Madhya Pradesh.	
Participants	From Stakeholder	From SAI Consulting Engineers Pvt. Ltd.
	Mr. Kamal Dhut and Mr. Sanjay	Mr. Nisarg Thanki, Urban Planner
S. No.	Points Discussed/suggestions made	
1.	Team of SAI Consulting Engineers Pvt Ltd – A Systra group Company had brief discussion regarding Eco Sensitive Zone of Satpura National Park, Bori wildlife Sanctuary and Pachmarhi Wildlife Sanctuary of Madhya Pradesh.	
2.	<ul style="list-style-type: none"> It was discussed during meeting that Pagara, Bariam, Singanama, Ghana and Chakar villages were de-reserved by Honorable Supreme Court from Sanctuary and National Park. At present, Pachmarhi has two administrative division of Cantonment and SADA. It was pointed out in discussion that G+3 construction is allowed in Cantonment area, while horizontal or vertical construction is not allowed in SADA area as per judgement of Honorable Supreme Court. It was suggested by Mr. Kamal that horticulture can be promoted in areas of Matkuli and Madhai as a livelihood opportunity in ESZ area. But a solution for monkey nuisance must be found. 	
3.	<p>A brief discussion regarding demands/need of Hotel/ resort owners are as below:</p> <ul style="list-style-type: none"> Permission for ground floor level construction for resorts in Pachmarhi Allowable Ground coverage for Resorts/Hotels 5% to 7% of total area for large scale construction and 10% of total area for small scale construction Minimum restrictions for usage of construction material, though green material can be promoted. Permission for camping in forest areas of buffer Permission for watersports/ adventure activities in and surrounding areas of Tawa reservoir A certification/ rewards for Eco-resorts or green building construction 	
4.	<ul style="list-style-type: none"> The tourism potential for ESZ area was also discussed briefly on map during the meeting in which it was suggested that bird watching activities can be promoted in areas of Madhai and Pachmarhi by plantation of specific species trees that attracts various birds. It was also suggested that eco-tourism activities like camping, tribal hut and village tourism can be promoted in surrounding areas of villages of Khapa - Badgaon. 	

	<ul style="list-style-type: none"> • For wildlife tourism, Parsapani and Jamanidev can be potential spots for wild life safari as presence of wild animals can be frequently observed in area. It was also suggested that by providing grasslands in these villages can increase chances of sighting of wildlife. • It was also pointed out that the area of Pathai village to Sehra village has potential to be developed for tourism by proposing conservation measures like meadow management, water source management and tree plantation. This area has potential tourism for bird watching, wildlife animal sighting and water sports/ adventure activities in Tawa reservoir. • It was also suggested for conservation and maintenance of existing waterbodies as a potential source of water. • The Organic Farming can be developed on PPP based model and can be promoted for markets. It can be beneficiary for farmers at local level.
5.	<p>On the same line of discussion threats to the eco-sensitive zone also discussed on below points.</p> <ul style="list-style-type: none"> • Variation in water levels of Tawa reservoir can be hazardous for aquatic fauna in ESZ area and not suitable for water-based activities • Uncontrolled grazing and shortage of grassland causing increase in human-wildlife conflicts in surrounding areas of core zone • Organized criminal activities regarding poaching and forest produces can be harmful from southern part of Chhindwara, i.e. Alimod-Nandia route.

The meetings ended with vote of thanks.

Annexure -3.1: Population Density in Notified Villages of ESZ of STR

Sr No	Village	Total Geographical Area (in Hectares)	Total Population	Population Density (Per Ha)
1	Aanhoani	526.32	289	0.55
2	Alimod	3522.27	671	0.19
3	Amadeh	346.95	139	0.4
4	Bardha	636.89	1191	1.87
5	Baruth	181.97	545	2.99
6	Belkhedi	914.01	555	0.61
7	Bhatodi	1185.68	622	0.52
8	Bijori	1351.19	1275	0.94
9	Bindakheda	186.2	445	2.39
10	Bori	543.44	593	1.09
11	Chatua	53.42	358	6.7
12	Chhatiaam	184.03	400	2.17
13	Chhirrai	456.47	371	0.81
14	Chicha	131.12	884	6.74
15	Chillod	212.43	200	0.94
16	Choka	363.96	115	0.32
17	Churni	1235	218	0.18
18	Daudi	564.34	789	1.4
19	Devi	309.64	137	0.44
20	Dhasaii	243.8	612	2.51
21	Dokrikheda	432.29	418	0.97
22	Dundi	45.5	88	1.93
23	Ghogri	870.27	437	0.5
24	Ghogri matha	304.23	359	1.18
25	Jhalai	218	372	1.71
26	Jhiria	22.56	313	13.87
27	Jhirpa	932.62	1131	1.21
28	Jhunkar	564.34	1276	2.26
29	Kamti	511.18	771	1.51
30	Karer	545.74	314	0.58
31	Kelipunji	314.93	530	1.68
32	Khamda	332	302	0.91
33	Khanchari	301.22	687	2.28
34	Khari	499.07	160	0.32
35	Kharpawad	1117.7	341	0.31
36	Kotmi	433.23	454	1.05
37	Madho	89.21	134	1.5
38	Maharajgang	1268.67	416	0.33
39	Malli	89.95	188	2.09
40	Mallupura	194	252	1.3
41	Mangaria	363.94	399	1.1
42	Matkuli	611.21	2625	4.29

Sr No	Village	Total Geographical Area (in Hectares)	Total Population	Population Density (Per Ha)
43	Mehandikheda	156.95	198	1.26
44	Mohagaun	239.52	282	1.18
45	Muharikala	554.51	547	0.99
46	Muharikhurd	652.21	272	0.42
47	Nandia	456.83	438	0.96
48	Nayagaon	727.76	1631	2.24
49	Nishan	700	797	1.14
50	Pachmarhi	1001	12062	12.05
51	Pathai	63	231	3.67
52	Pisua	861.35	592	0.69
53	Raitwadi	224.67	349	1.55
54	Sakri	446.5	96	0.22
55	Sangakheda	1113.17	1150	1.03
56	Sanghii	545.71	452	0.83
57	Sarangpur	314.62	516	1.64
58	Supdongar	1335	521	0.39
59	Suplai	278	582	2.09
60	Tekapar	1156.77	630	0.54
61	Tekapar Chourmahri	595.14	859	1.44
62	Ranipur (Tawanagar)	1863	4561	2.45
63	Urdaon	899.69	434	0.48
Total		37396.39	49576	1.33

Annexure 3-2 : List of Villages with proposed expansion area

Sr.No	Village Name	Population	Buffer for Future Expansion of Village
1	Alimod	671	200
2	Amadeh	139	100
3	Raitwadi	349	100
4	Aaditoria	289	100
5	Bardha	1191	300
6	Devi	137	100
7	Baruth	545	200
8	Belkhedi	555	200
9	Bijori	1275	300
10	Bori	593	200
11	Chauka	115	100
12	Chhirrai	371	100
13	Chillod	200	100
14	Churni	218	100
15	Dokrikheda	418	100
16	Kamti	771	200
17	Suplai	582	200
18	Chatua	358	100
19	Chicha	884	200
20	Mallupura	252	100
21	Ranipur (Tawanagar)	4561	300
22	Ghoghari	437	100
23	Nishan	797	200
24	Karer	314	100
25	Khanchari	687	200
26	Jhirpa	1131	300
27	Khari	160	100
28	Kharpawad	341	100
29	Maharajgang	416	100
30	Kotmi	454	100
31	Madho	134	100
32	Magariya	399	100
33	Mehdi Kheda	198	100
34	Matkuli	2625	300
35	Malli	188	100
36	Mohgaon	282	100
37	Muhari Kalan	547	200
38	Nandiya	438	100
39	Nayagaon	1631	300
40	Pisua	592	200
41	Sanghii	452	100
42	Sangghkheda	1150	300
43	Sarangpur	516	200

Sr.No	Village Name	Population	Buffer for Future Expansion of Village
44	Tekapar	630	200
45	Tekapar Chourmarhi	859	200
46	Urdaon	434	100
47	Chhatiaam	400	100
48	Binda Kheda	445	100
49	Bhatodi	622	200
50	Supdongar	NA	100
51	Sakri	NA	100
52	Aaditoria	NA	100
53	Gutkheda	NA	100
54	Kundaidhana	NA	100
55	Umarhole	NA	100
56	Lukkadhana	NA	100
57	Anjandhana	NA	100
58	Bandhan	NA	100
59	Sehra	NA	100
60	Mohgaon	NA	100
61	Muharikhurd	NA	100
62	Khamda	NA	100
63	Fiferi	NA	100
64	Dhasaii	612	200
65	Kelipunji	577	200
66	Daudi	789	200
67	Jhunkar	1276	300
68	Jhiria	313	100
69	Ghoghari Mattha	359	100
70	Maruapura	NA	100
71	Ladema	NA	100
Village without Settlement (ON MAP)			
72	Chichadhana	Uninhabited as per Census 2011	
73	Jhalai	372	Relocated
74	Pathai	231	Relocated
75	Navatola	NA	Relocated
76	Neksa	NA	Relocated
77	Manakachar	NA	Relocated
78	Dundi	88	Relocated
79	Kurrai	NA	Relocated
80	Dundalum	NA	100

Annexure 3.3 : Health Facility in ESZ Villages

Villages	Total Population	Health facility	Veterinary Clinic
1	2	3	4
Alimod	671	0	0
Amadeh	139	0	0
Raitwadi	349	0	0
Aanhoani	289	0	0
Bardha	1191	0	0
Devi	137	0	0
Baruth	545	0	0
Belkhedi	555	0	0
Bhatodi	622	0	0
Bijori	1275	0	0
Bindakheda	445	0	0
Bori	593	0	0
Chatua	358	0	0
Choka	115	0	0
Chhatiaam	400	0	0
Chhirrai	371	0	0
Chichadhana	Uninhabited		
Chillod	200	0	0
Churni	218	0	0
Dhasaii	612	0	0
Daudi	789	0	0
Dokrikheda	418	1	1
Dundi	88	0	0
Ghogri	437	0	0
Ghogri matha	359	0	0
Jhalai	372	0	0
Jhiria	313	0	0
Jhirpa	1131	1	1
Jhunkar	1276	1	0
Kelipunji	530	0	0
Kamti	771	0	0
Karer	314	0	0
Khamda	302	0	0
Khanchari	687	0	0

Villages	Total Population	Health facility	Veterinary Clinic
Khari	160	0	0
Kharpawad	341	0	0
Maharajgang	416	0	0
Kotmi	454	0	0
Madho	134	0	0
Mangaria	399	0	0
Mallupura	252	0	0
Matkuli	2625	2	1
Mehandikheda	198	0	0
Malli	188	0	0
Mohagaun	282	0	0
Muharikala	547	0	0
Muharikhurd	272	0	0
Nandia	438	0	0
Chicha	884	0	0
Nayagaon	1631	1	0
Nishan	797	0	0
Pathai	231	0	0
Pisua	592	0	0
Sanghii	452	0	0
Sangakheda	1150	2	0
Sakri	96	0	0
Sarangpur	516	0	0
Supdongar	521	0	0
Suplai	582	0	0
Tekapar	630	0	0
Tekapar Chourmarhi	859	1	0
Urdaon	434	0	0

Source: Census 2011 & Primary Survey

Annexure 3.4 : Solid Waste Management in ESZ Villages

Villages	Total Population	Community waste disposal system after house to house collection (Status A(1)/NA(2))	Community Bio-gas or recycle of waste for production use (Status A(1)/NA(2))	No System (Garbage on road/street) (Status A(1)/NA(2))
Alimod	671	2	2	1
Amadeh	139	2	2	1
Raitwadi	349	2	2	1
Aanhoani	289	2	2	1
Bardha	1191	2	2	1
Devi	137	2	2	1
Baruth	545	2	2	1
Belkhedi	555	2	2	1
Bhatodi	622	2	2	1
Bijori	1275	2	2	1
Bindakheda	445	2	2	1
Bori	593	2	2	1
Chatua	358	2	2	1
Choka	115	2	2	1
Chhatiaam	400	2	2	1
Chhirrai	371	2	2	1
Chichadhana	uninhabited			
Chillod	200	2	2	1
Churni	218	2	2	1
Dhasaii	612	2	2	1
Daudi	789	2	2	1
Dokrikheda	418	2	2	1
Dundi	88	2	2	1
Ghogri	437	2	2	1
Ghogri matha	359	2	2	1
Jhalai	372	2	2	1
Jhiria	313	2	2	1
Jhirpa	1131	2	2	1
Jhunkar	1276	2	2	1
Kelipunji	530	2	2	1
Kamti	771	2	2	1
Karer	314	2	2	1
Khamda	302	2	2	1
Khanchari	687	2	2	1
Khari	160	2	2	1

Villages	Total Population	Community waste disposal system after house to house collection (Status A(1)/NA(2))	Community Bio-gas or recycle of waste for production use (Status A(1)/NA(2))	No System (Garbage on road/street) (Status A(1)/NA(2))
Kharpawad	341	2	2	1
Maharajgang	416	2	2	1
Kotmi	454	2	2	1
Madho	134	2	2	1
Mangaria	399	2	2	1
Mallupura	252	2	2	1
Matkuli	2625	2	2	1
Mehandikheda	198	2	2	1
Malli	188	2	2	1
Mohagaun	282	2	2	1
Muharikala	547	2	2	1
Muharikhurd	272	2	2	1
Nandia	438	2	2	1
Chicha	884	2	2	1
Nayagaon	1631	2	2	1
Nishan	797	2	2	1
Pathai	231	2	2	1
Pisua	592	2	2	1
Sanghii	452	2	2	1
Sangakheda	1150	2	2	1
Sakri	96	2	2	1
Sarangpur	516	2	2	1
Supdongar	521	2	2	1
Suplai	582	2	2	1
Tekapar	630	2	2	1
Tekapar Chourmarhi	859	2	2	1
Urdaon	434	2	2	1

Annexure 5.1 : Tourism Places in proximity of Pachmarhi

Sr No	Categories	Sub-Category	Name of places
1	Pool and Kunds	Dazzling Pool	Sunder kund (Saunder pool)
2		Dazzling Pool	Tynam Pool (Rajyapal Sar)
3		Dazzling Pool	Ramyakund (Irene Pool)
4		Dazzling Pool	Apasara Vihar (Fairy Pool)
5		Dazzling Pool	Pansy Pool (Vanashri Vihar)
6		Flashy Pool	Prabhu pool
7		Flashy Pool	Big Dam (Jamuna Kund)
8		Flashy Pool	Fallen kund (Sangam) or watermeet
9	Water Fall and streams	Glittering Fall	Duchess fall
10		Glittering Fall	Bee fall
11		Glittering Fall	Apsara vihar
12		Glittering Fall	Rajshri prapat
13		Glittering Fall	Rajat Prapat
12		Ravishing Fall	Jayshri prapat
13		Ravishing Fall	Raj Prapat
16		Ravishing Fall	Pravas Prapat (Little Fall)
17		Perpetual Stream	Dorothy deep (bharant neer)
18		Perpetual Stream	Fraser Gully (jalgalee)
19	Perpetual Stream	Tridhara (Piccadily Circus)	
19	Hills, Mountain and Highland	Apical Highland View	Dhoopgarh Sunset point
20		Apical Highland View	Mayhew (eashar Shring)
21		Apical Highland View	Kitty crog (Sudarishya)
22		Apical Highland View	Machli ka maur
23		Apical Highland View	Monte Rosa (Astachal)
24		Apical Highland View	Island rock (Dwell Shail)
25		Apical Highland View	The Hoggs Back (Vallabh Prastha)
26		Apical Highland View	Handi kho
27		Apical Highland View	Lanji hills
28		Apical Highland View	Club hill (Rajgiri)
29		Apical Highland View	Titang Pahar
30		Lanky Hill View	Docrag (Durgam Giri)
31		Lanky Hill View	Mount Morris (Ekant giri)
32		Lanky Hill View	Rajendra giri(Panorama Hills)
33	Lanky Hill View	Bainsa Sur Hill	
41	Viewing points and Other Important Location	Eminent Viewing Point	Malcolm Point (chauradarshan)
42		Eminent Viewing Point	Collector crag (sadoor darshan)
43		Eminent Viewing Point	Asanna khud
44		Eminent Viewing Point	Asanna (Drisdya)
45		Eminent Viewing Point	Blundell's Bluft (vatsalya)

Sr No	Categories	Sub-Category	Name of places	
46		Eminent Viewing Point	Lady robert somi view (Vatsalya)	
47		Eminent Viewing Point	Priyadarshni	
48		Eminent Viewing Point	Blundell's Bluft (Vatasalya)	
49		Eminent Viewing Point	Maine rock	
50		Eminent Viewing Point	Rorighat darshan	
51		Eminent Viewing Point	Sangam Door	
52		Vantage Viewing Points	Keating point (Sangam Door)	
53		Vantage Viewing Points	Crumpcrag (Sushma Sar)	
54		Vantage Viewing Points	Best view (shilanjali)	
55		Vantage Viewing Points	Clematis point (Poorva Darshan)	
56		Vantage Viewing Points	Helen Point (Denwa Darshan)	
57		Vantage Viewing Points	Baisy Khud or Prati Dhvani	
58		Vantage Viewing Points	Landdowne point (Iatshring)	
59		Other	Archaic Heritage Site	Begam Palace
60			Archaic Heritage Site	Lat Sring
61			Archaic Heritage Site	Bison Lodge
62			Ancient Rock Cave	Rechgarh

Annexure 5.2: List of Resorts and Hotels in STR

Sr.No.	Hotel / Resort Name	Rooms
1	New Hotel	56
2	Satpuda Retreat Hotel	10
3	Glen View Hotel	25
4	Highland Hotel	40
5	Hilltop Bunglow	5
6	Nandan van MPT	12
7	Amaltas Hotel	15
8	Rock & Manner, MPT	6
9	Nilambar Hotel	6
10	Greendale Hotel	23
11	Chanmpak Bangla Hotel MPT	32
12	Woodland Banglaw,MPT	10
13	Karnikar Hotel	17
14	Old Hotel	10
15	R.K.Resort & Tori Kartej Hotel	20
16	Ark Resort Hotel	25
17	Golf View Hotel	32
18	Hotel Rock View	10
19	Indraprasth Pachmarhi	28
20	Amarapali Hotel, Pachmarhi	25
21	Natraj Hotel Pachmarhi	18
22	Meghdoot Hotel, Pachmarhi	17
23	Sapna Hotel, Pachmarhi	7
24	Paradise Hotel, Pachmarhi	12
25	Khalsa Hotel, Pachmarhi	6
26	Park View Hotel Pachmarhi	16
27	Bhagirath Hotel	4
28	Manjushree Hotel	10
29	Misty Meadows, Pachmarhi	23
30	Pachmarhi Hotel	28
31	Saket Hotel	32
32	Parikalp Hotel, Pachmarhi	10
33	Shrinath Hotel	6
34	jaypalace Hotel	14
35	Gurukrupa Hotel, Pachmarhi	8
36	Payal Cottage, Pachmarhi	7
37	Pushpkdham Hotel, Pachmarhi	18
38	Shivalaya Hotel, Pachmarhi	8
39	Paradise home stay Hotel	9
40	Agrawal Hotel, Pachmarhi	12
41	Satpuda safari Hotel	15
42	Shrikrushna Hotel Pachmarhi	6

Sr.No.	Hotel / Resort Name	Rooms
43	Rajvihar hotel, Pachmarhi	7
44	Himalaya Hotel, Pachmarhi	8
45	Vinayak Hotel Pachmarhi	11
46	Krushna Hotel Pachmarhi	4
47	Anglel Hotel Pachmarhi	7
48	Giriraj Hotel	6
49	Nilkamal Hotel	5
50	Shilpa Hotel	6
51	Abhilasha Hotel Pachmarhi	10
52	Balaji Hotel	5
53	Vijayshree Hotel	5
54	Pratik Hotel	7
55	Royal Hotel	6
56	Nilkanth Hotel	7
57	Prayag Hotel	9
58	Mrugnayani Hotel	5
59	Jain Hotel	8
60	Mountain Green	5
61	Amar Place Hotel	8
62	Rajlaxmi Hotel Pachmarhi	6
63	D light Hotel	20
64	Banjara Hotel Pachmarhi	10
65	Taj Resort Pachmarhi	10
66	Pandav Hill Pachmarhi	10
67	Blue moon Hotel, Pachmarhi	10
68	Pandav Hotel	20
69	Kachnar Hotel	12
70	City Place Hotel	9
71	Arihant Hotel	14
72	Five Earsis Hotel	9
73	Bombay Resort Pachmarhi	10
74	Hotel Shiddhi vinayank	8
75	Pandav Retreat	13
76	Abhimanyu Hotel	12
77	Oberoye Hotel	8
78	Gokuldharm Hotel	6
79	Madhur milan Hotel	8
80	Umashree Hotel	19
81	Pachmarhi residency	12
82	Sanskar and Ambashree Hotel	21
83	Shiva Palce Hotel	17
84	Shree Krishna Hotel	12
85	The midland Hotel	5

Sr.No.	Hotel / Resort Name	Rooms
86	Summer house Hotel	30
87	Pramukh Cottage	21
88	Hotel Suryam	10
90	Yadav Residency	8
91	Krishna Residency	6
92	Resort Panarpani	5
93	Panchmathi Foothill cottage	11
94	Singanama Farm Resort	8
95	Ecotel Pachmarhi	24
96	Denwa Winds	40
97	The Madhai Resort	12
98	Avas at Madhai	7
99	Baison Lodge	12
100	Sunshine	12
101	Satpuda Valley	8

Sr.No.	Hotel / Resort Name	Rooms
102	Dreamview Heritage	10
103	Madhai River Side Lodge	13
104	Anmol Resort	10
105	Satpuda Safari	10
106	Satpuda Jangal Retreat	16
107	Foresyth Loge	11
108	Chittal Reosrt	12
109	Gold Mark	9
110	Denwa Back Water	14
111	Raini Pani Jungle Lodge	16
112	Panch Tal Denva	4
113	Shree Krishna home stay	1
114	Vikas home stay	1
115	farm house	6
116	Satpuda River View	2

Annexure 7.1 : Tables for Standards

A. Pollution related Standards

Table 1 : Air Quality standards for effluents as per CPCB guidelines

S.No.	Pollutant	Time Weighted Average	Ecologically Sensitive Area (notified by Central Government)
1	2	3	5
1	Sulphur Dioxide (SO ₂), ug/m ³	Annual * 24 hours**	20 80
2	Nitrogen Dioxide (NO ₂), ug/m ³	Annual * 24 hours**	30 80
3	Particulate Matter (size less than 10um) or PM ₁₀ ug/m ³	Annual * 24 hours**	60 100
4	Particulate Matter (size less than 2.5um) or PM _{2.5} ug/m ³	Annual * 24 hours**	40 60
5	Ozone (O ₃) ug/m ³	8 hours** 1 hours**	100 180
6	Lead (Pb) ug/m ³	Annual * 24 hours**	0.50 1.0
7	Carbon Monoxide(CO) mg/m ³	8 hours** 1 hours**	02 04
8	Ammonia (NH ₃) ug/m ³	Annual * 24 hours**	100 400
9	Benzene (C ₆ H ₆) ug/m ³	Annual *	5
10	Benzo(a) Pyrene (BaP) - particulate phase only, ng/m ³	Annual *	1
11	Arsenic (As), ng/m ³	Annual *	6
12	Nickel (Ni), ng/m ³	Annual *	20

Table 2 : General standards for effluents as per CPCB guidelines

S.No.	Parameter	Standards			
		Inland surface water	Public sewers	Land for Irrigation	Marine/coastal areas
1	Colour and odour	See 6 of Annexure-I	-	See 6 of Annexure-I	See 6 of Annexure-I
2	Suspended solids mg/l, max	100	600	200	(a) For process waste water (b) For cooling water effluent 10 per cent above total suspended matter of influent.
3	Particle size of suspended solids	shall pass 850 micron IS Sieve	-		(a) Floatable solids, solids max. 3 mm (b) Settleable solids, max 856 microns
4	pH value	5.5 to 9.0	5.5. to 9.0	5.5 to 9.0	5.5 to 9.0
5	Temperature	shall not exceed 5 C above the receiving water temperature	-	-	shall not exceed 5 C above the receiving water temperature
6	Oil and grease, mg/l max,	10	20	10	20
7	Total residual chlorine, mg/l max.	1	-	-	1
8	Ammonical nitrogen (as N), mg/l, max	50	50	-	50
9	Total kjeldahl nitrogen (as N); mg/l, max	100	-	-	100
10	Free ammonia (as NH ₃), mg/l, max.	5	-	-	5
11	Biochemical oxygen demand (3 days at 27 C), mg/l, max.	30	350	100	100

12	Chemical oxygen demand, mg/l, max.	250	-	-	250
13	Arsenic (as As).	0.2	0.2	0.2	0.2
14	Mecury (As Hg), mg/l, max.	0.01	0.01	-	0.01
15	Lead (as Pb) mg/l, max	0.1	1	-	2
16	Cadmium (as Cd) mg/l, max	2	1	-	2
17	Hexavalent chromium (as Cr+6), mg/l, max.	0.1	2	-	1
18	Total chromium (as Cr) mg/l, max.	2	2	-	2
19	Copper (as Cu) mg/l, max.	3	3	-	3
20	Zinc (as Zn) mg/l, max.	5	15	-	15
21	Selenium (as Se)	0.05	0.05	-	0.05
22	Nickel (as Ni) mg/l, max.	3	3	-	5
23	Cyanide (as CN) mg/l, max.	0.2	2	0.2	0.2
24	Fluoride (as F) mg/l, max.	2	15	-	15
25	Dissolved phosphates (as P), mg/l, max.	5	-	-	-
26	Sulphide (as S) mg/l, max.	2	-	-	5
27	Phenolic compounds (as C ₆ H ₅ OH) mg/l, max.	1	5	-	5
28	Radioactive materials: (a) Alpha emitters micro curie mg/l, max.	(10) ⁻⁷	(10) ⁻⁷	(10) ⁻⁸	(10) ⁻⁷
	(b) Beta emitters micro curie mg/l	(10) ⁻⁶	(10) ⁻⁶	(10) ⁻⁷	(10) ⁻⁶

29	Bio-assay test	90 % survival of fish after 96 hours in 100% effluent	90 % survival of fish after 96 hours in 100% effluent	90 % survival of fish after 96 hours in 100% effluent	90 % survival of fish after 96 hours in 100% effluent
30	Manganese	2mg/l	2 mg/l	-	2 mg/l
31	Iron (as Fe)	3 mg/l	3 mg/l	-	3 mg/l
32	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-	0.2 mg/l
33	Nitrate Nitrogen	10 mg/l	-	-	20 mg/l

These standards shall be applicable for industries, operations or processes other than those industries, operations or process for which standards have been specified in Schedule of the Environment Protection Rules, 1989. The standards can be modified as per guidelines or suggestions of Pollution Control Board.

Table 3 : Noise level standards as per CPCB guidelines

Area code	Category of Area	Limit in dB (A) Leq	
		Day Time	Night Time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40
Note-1 Day time is reckoned in between 6 a.m., and 9 p.m.			
Note-1 Night time is reckoned in between 9 p.m., and 6 a.m.			
Note-1 Silence zone is defined as areas up to 100 metres around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the Competent Authority.			
Note-1 Mixed categories of areas should be declared as "one of the four above mentioned categories by the Competent Authority and the corresponding standard shall apply.			

B. Standards for Industries

Table 4 : General standards for small-scale industries as per CPCB guidelines

Sr. No.	Parameter	Concentration not to exceed, limits in mg/l (except pH, temperature and bio-assay test)
1	Mercury (Hg)	0.01
2	pH	5.5-9.0
3	Suspended solids	250
4	Biochemical oxygen demand (3 days at 27°C)	150
5	Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body
6	Free available chlorine	0.5
7	Oil & grease	10

Sr. No.	Parameter	Concentration not to exceed, limits in mg/l (except pH, temperature and bio-assay test)
8	Cu (total)	3
9	Iron (total)	3
10	Zinc	5
11	Cr(total)	3
12	Phosphate (as P)	5
13	Bioassay test	90% of test animals survival after 96 hrs with 1:8 dilution
14	Sulphide (as S)	2
15	Phenolic compounds	5
16	(as C ₆ H ₅ OH)	5
16	Hexavalent chromium (as Cr)	0.1
17	Nickel (as Ni)	3
18	Cadmium (Cd)	2
19	Chloride (as Cl)	1000
20	Sulphate (as SO ₄)	1000
21	Cyanide (asCN)	0.2
22	Ammoniacal nitrogen (as N)	50
23	Lead (as Pb)	0.1
24	Total Metal	10

Table 5 : General standards for food industries as per CPCB guidelines

Category	Concentration not to exceed				Quantum
	pH	Suspended solids (mg/l)	Oil & Grease (mg/l)	BOD at 27°C for 3 days (mg/l)	gm/tonne of product
A. Soft drinks	NA	NA	NA	NA	NA
a) Fruit based / synthetic (more than 0.4 tonne/day Bottles and tetrapack	6.5-8.5	100	10	30	0
b) Synthetic (<0.4 tonne/day)	disposal Via septic tank				
B. Fruits & Vegetables	NA	NA	NA	NA	NA
a) Above 0.4 tonne/day	6.5-8.5	50	10	30	-
b) 0.1-0.4 tonne/day	6.5-8.5	-	-	300*	-
C. Bakery	NA	NA	NA	NA	NA
a) Bread and biscuit	NA	NA	NA	NA	NA
1. Continuous process (more than 20 tonne/day)	6.5-8.5	-	-	200*	25

Category	Concentration not to exceed				Quantum
	pH	Suspended solids (mg/l)	Oil & Grease (mg/l)	BOD at 27°C for 3 days (mg/l)	gm/tonne of product
2. Noncontinuous Process (less than 20 tonne/day)	disposal via septic tank				
b) Biscuit production	NA	NA	NA	NA	NA
1. 10 tonne / day & Above	6.5-8.5	-	-	300*	35
2. Below 10 tonne/day	disposal via septic tank				
D. Confectionaries	NA	NA	NA	NA	NA
a) 4 tonne/day & Above	6.5-8.5	50	10	30	-
b) Below 4 tonne/day	disposal via septic tank				

Table 6 : General standards for flour mills as per CPCB guidelines

Parameter	Concentration not be exceed
pH	6.5-8.5
BOD at 27°C for 3 days	100 mg/l
Total suspended solids	100 mg/l
Oil & grease	10 mg/l
Wastewater discharge	2 cubic metre per tonne of wheat processed

Annexure 11-1 : Physical Infrastructure Requirement for Villages of ESZ of STR

Physical Infrastructure Requirement for Villages of ESZ of STR																			
Sr. No.	Village	1991	2001	2011	2021	2031	For Domestic Purpose			For Tourists				Based on Accomodation facility and Tourist destination			Total Infrastructure Requirement		
							Water Supply Requirement (55 LPCD for rural population + 30 LPCD for livestock) & (135 LPCD for Urban Area) (liters)	Waste Water Generation (80% of water supply) (liters)	Solid Waste Generation (0.5 kg/day)	Carrying capacity	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement	Waste Water Generation	Solid Waste Generation
1	Kharpawad	NA	268	341	418	453	38505	30804	227	1116	200880	160704	1116				38505	30804	227
2	Urdon	245	344	434	566	714	60678	48543	357					50220	40176	279	110898	88719	636
3	Mangaria	242	328	399	504	617	52444	41955	308					50220	40176	279	102664	82131	587
4	Ghogri	254	337	437	569	722	61374	49099	361								61374	49099	361
5	Kamti	707	744	771	807	841	71459	57167	420								71459	57167	420
6	Sarangpur	350	415	516	635	772	65578	52463	386					50220	40176	279	115798	92639	665
7	Tekapar Chourmahri	583	692	859	1056	1282	108995	87196	641								108995	87196	641
8	Aanhoani	254	224	289	336	408	34701	27761	204	56634	849510	679608	56634	169902	135922	11327	204603	163683	11531
9	Dokrikheda	322	446	418	445	437	37183	29746	219					679608	543686	45307	716791	573433	45526
10	Choka	98	99	115	129	148	12550	10040	74								12550	10040	74
11	Jhiria	51	135	313	683	1471	125029	100023	735								125029	100023	735
12	Amadeh	69	97	139	195	263	22380	17904	132				22380	17904	132				
13	Raitwadi	238	312	349	414	475	40369	32295	237				40369	32295	237				
14	Bori	311	325	593	877	1268	107815	86252	634				107815	86252	634				

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Physical Infrastructure Requirement for Villages of ESZ of STR

Sr. No.	Village	1991	2001	2011	2021	2031	For Domestic Purpose			For Tourists				Based on Accomodation facility and Tourist destination			Total Infrastructure Requirement		
							Water Supply Requirement (55 LPCD for rural population + 30 LPCD for livestock) & (135 LPCD for Urban Area) (liters)	Waste Water Generation (80% of water supply) (liters)	Solid Waste Generation (0.5 kg/day)	Carrying capacity	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement	Waste Water Generation	Solid Waste Generation
15	Madho	132	147	134	128	116	9853	7882	58							9853	7882	58	
16	Devi	116	109	137	159	191	16223	12978	95							16223	12978	95	
17	Chillod	149	174	200	233	268	22771	18217	134	3770	678600	542880	3770	56550	45240	314	79321	63457	448
18	Khari	137	152	160	172	183	15582	12465	92					56550	45240	314	72132	57705	406
19	Mohagaun	170	239	282	353	428	36340	29072	214					56550	45240	314	92890	74312	528
20	Bindakheda	NA	341	445	556	704	59840	47872	352								59840	47872	352
21	Matkuli	2056	2423	2625	2943	3236	275084	220067	1618					56550	45240	314	331634	265307	1932
22	Mehandikheda	NA	111	198	306	470	39950	31960	235					56550	45240	314	96500	77200	549
23	Malli	105	140	188	250	324	27533	22027	162					56550	45240	314	84083	67267	476
24	Bindakheda	NA	341	445	556	619	52615	42092	310					56550	45240	314	109165	87332	624
25	Jhirpa	849	1023	1131	1295	1453	123475	98780	726					56550	45240	314	180025	144020	1040
26	Khanchari	506	591	687	806	935	79455	63564	467					56550	45240	314	136005	108804	782
27	Karer	232	303	314	353	380	32283	25826	190					56550	45240	314	88833	71066	504
28	Chhirrai	241	322	371	451	531	45135	36108	266					56550	45240	314	101685	81348	580
29	Tekapar	488	531	630	734	856	72789	58232	428					56550	45240	314	129339	103472	742
30	Pisua	406	467	592	731	895	76106	60885	448	231	41580	33264	231	41580	33264	231	117686	94149	679

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Physical Infrastructure Requirement for Villages of ESZ of STR

Sr. No.	Village	1991	2001	2011	2021	2031	For Domestic Purpose			For Tourists				Based on Accomodation facility and Tourist destination			Total Infrastructure Requirement		
							Water Supply Requirement (55 LPCD for rural population + 30 LPCD for livestock) & (135 LPCD for Urban Area) (liters)	Waste Water Generation (80% of water supply) (liters)	Solid Waste Generation (0.5 kg/day)	Carrying capacity	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement	Waste Water Generation	Solid Waste Generation
31	Belkhedi	422	387	555	697	897	76211	60969	448								76211	60969	448
32	Bijori	565	1020	1275	1794	2408	204683	163746	1204	33768	506520	405216	33768	151956	121565	10130	356639	285311	11334
33	Sangakheda	821	820	1150	1455	1860	158108	126486	930					253260	202608	16884	411368	329094	17814
34	Nandia	305	346	438	538	658	55906	44725	329					101304	81043	6754	157210	125768	7082
35	Sakri	53	71	96	128	167	14198	11358	84	204	36720	29376	204				14198	11358	84
36	Supdonagar	399	377	521	645	815	69254	55403	407					12240	9792	68	81494	65195	475
37	Churni	134	115	218	316	457	38838	31070	228					12240	9792	68	51078	40862	296
38	Nishan	617	588	797	976	1222	103886	83108	611					12240	9792	68	116126	92900	679
39	Alimod	384	474	671	900	1184	100660	80528	592	463	83340	66672	463	83340	66672	463	184000	147200	1055
40	Baruth	314	409	545	717	921	78292	62634	461								78292	62634	461
41	Pachmarhi	12495	11370	12062	12281	12955	1748869	1399095	6477	3300	594000	475200	3300	594000	475200	3300	2342869	1874295	9777
42	Bardha	282	945	1191	2230	4245	360855	288684	2123	751	135180	108144	751	67590	54072	376	428445	342756	2498
43	Dhasaii	386	532	612	750	888	75498	60398	444					67590	54072	376	143088	114470	820
44	Kelipunji	530	697	577	540	433	36786	29429	216								36786	29429	216
45	Tawanagar (Ranipur)	5248	5041	4561	4108	3595	485286	388229	1797	20439	306585	245268	20439	306585	245268	20439	791871	633497	22236
46	Daudi	NA	589	789	1184	1578	134130	107304	789								134130	107304	789

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Physical Infrastructure Requirement for Villages of ESZ of STR


Sr. No.	Village	1991	2001	2011	2021	2031	For Domestic Purpose			For Tourists				Based on Accomodation facility and Tourist destination			Total Infrastructure Requirement		
							Water Supply Requirement (55 LPCD for rural population + 30 LPCD for livestock) & (135 LPCD for Urban Area) (liters)	Waste Water Generation (80% of water supply) (liters)	Solid Waste Generation (0.5 kg/day)	Carrying capacity	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement	Waste Water Generation	Solid Waste Generation
47	Jhunkar	754	994	1276	1649	2077	176585	141268	1039								176585	141268	1039
48	Anjandhana	NA	338	411	468	531	45135	36108	266								45135	36108	266
49	Belkhedi	422	387	555	697	897	76211	60969	448								76211	60969	448
50	Bhatodi	337	367	622	893	1257	106845	85476	629								106845	85476	629
51	Chatua	214	272	358	465	590	50163	40130	295								50163	40130	295
52	Chhatiaam	433	449	400	365	315	26751	21401	157								26751	21401	157
53	Dundi	41	58	88	Relocated Village														
54	Ghogri matha	235	270	359	456	574	48817	39054	287								48817	39054	287
55	Jhalai	225	260	372	Relocated Village														
56	Khamda	206	209	302	390	507	43116	34493	254								43116	34493	254
57	Maharajgang	239	355	416	528	644	54762	43809	322								54762	43809	322
58	Kotmi	501	584	454	378	248	21114	16891	124								21114	16891	124
59	Kursidhana	683	413	808	1119	1621	137817	110254	811								137817	110254	811
60	Mallupura	91	122	252	419	665	56492	45194	332								56492	45194	332
61	Muharikala	575	507	547	559	598	50841	40673	299								50841	40673	299
62	Muharikhurd	256	292	272	268	250	21279	17023	125								21279	17023	125

PART:3 - ANNEXURE

Physical Infrastructure Requirement for Villages of ESZ of STR																				
Sr. No.	Village	1991	2001	2011	2021	2031	For Domestic Purpose			For Tourists				Based on Accomodation facility and Tourist destination			Total Infrastructure Requirement			
							Water Supply Requirement (55 LPCD for rural population + 30 LPCD for livestock) & (135 LPCD for Urban Area) (liters)	Waste Water Generation (80% of water supply) (liters)	Solid Waste Generation (0.5 kg/day)	Carrying capacity	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement (180 LPCD for hotels and 15 LPCD for floating population) (liters)	Waste Water Generation (80% of water supply)	Solid Waste Generation (1 kg/day)	Water Supply Requirement	Waste Water Generation	Solid Waste Generation	
63	Chicha	NA	625	884	1170	1564	132940	106352	782							132940	106352	782		
64	Nayagaon	938	1220	1368	1620	1861	158153	126523	930							158153	126523	930		
65	Pathai	170	198	231	Relocated Village															
66	Sanghii	299	352	452	566	701	59571	47657	350							59571	47657	350		
67	Suplai	341	424	582	769	996	84688	67751	498							84688	67751	498		

Represents proposed accomodation facility in nearby area of village

Annexure 11-2 : Proposed Social Infrastructure Facility in the villages of ESZ of STR.

 = Proposed infrastructure facility in the village

SrNo.	Village	Banking	Mobile	Health	Education
1	Aaditoria				
2	Aanhoani				
3	Alimod				
4	Amadeh				
5	Anjandhana				
6	Bandhan				
7	Bardha				
8	Baruth				
9	Belkhedi				
10	Bhatodi				
11	Bijori				
12	Bindakheda				
13	Bori				
14	Chatua				
15	Chhatiaam				
16	Chhirrai				
17	Chicha				
18	Chichadhana				
19	Chillod				
20	Choka				
21	Churni				
22	Daudi				
23	Devi				
24	Dhasaii				
25	Dokrikheda				
26	Dundalum				
27	Dundi				
28	Fiferi				
29	Ghogri				
30	Ghogri matha				
31	Gutkheda				
32	Jhalai				
33	Jhiria				
34	Jhirpa				
35	Jhunkar				
36	Kamti				
37	Karer				
38	Kelipunji				
39	Khamda				
40	Khanchari				
41	Khari				
42	Kharpawad				
43	Kotmi				

SrNo.	Village	Banking	Mobile	Health	Education
44	Kundaidhana				
45	Kurrai				
46	Ladema				
47	Lukkhadhana				
48	Madho				
49	Maharajgang				
50	Malli				
51	Mallupura				
52	Manakachar				
53	Mangaria				
54	Maruapura				
55	Matkuli				
56	Mehandikheda				
57	Mohagaun				
58	Muharikala				
59	Muharikhurd				
60	Nandia				
61	Navatola				
62	Nayagaon				
63	Neksa				
64	Nishan				
65	Pachmarhi				
66	Pathai				
67	Pisua				
68	Raitwadi				
69	Ranipur (Tawanagar)				
70	Sakri				
71	Sangakheda				
72	Sanghii				
73	Sarangpur				
74	Sehra				
75	Supdongar				
76	Suplai				
77	Tekapar				
78	Tekapar Chourmarhi				
79	Umardole				
80	Urdaon				

Annexure 11-3 : Ground water recharge methods and case studies

Recharge Pits

Recharge pits are small pits of any shape rectangular, square or circular, constructed with brick or stone masonry wall with weep hole at regular intervals. Top of pit can be covered with perforated covers. Bottom of pit should be filled with filter media.

The capacity of the pit can be designed on the basis of catchment area, rainfall intensity and recharge rate of soil. Usually the dimensions of the pit may be of 1 to 2 m width and 2 to 3 m deep depending on the depth of pervious strata. These pits are suitable for recharging of shallow aquifers, and small houses. Abandoned gravel quarry pits or brick kiln quarry pits in alluvial areas and abandoned quarries in basaltic areas can also be used as recharge pits wherever they are underlain by permeable horizons. Nalah trench is a special case of recharge pit dug across a streambed. Ideal sites for such trenches are influent stretches of streams.

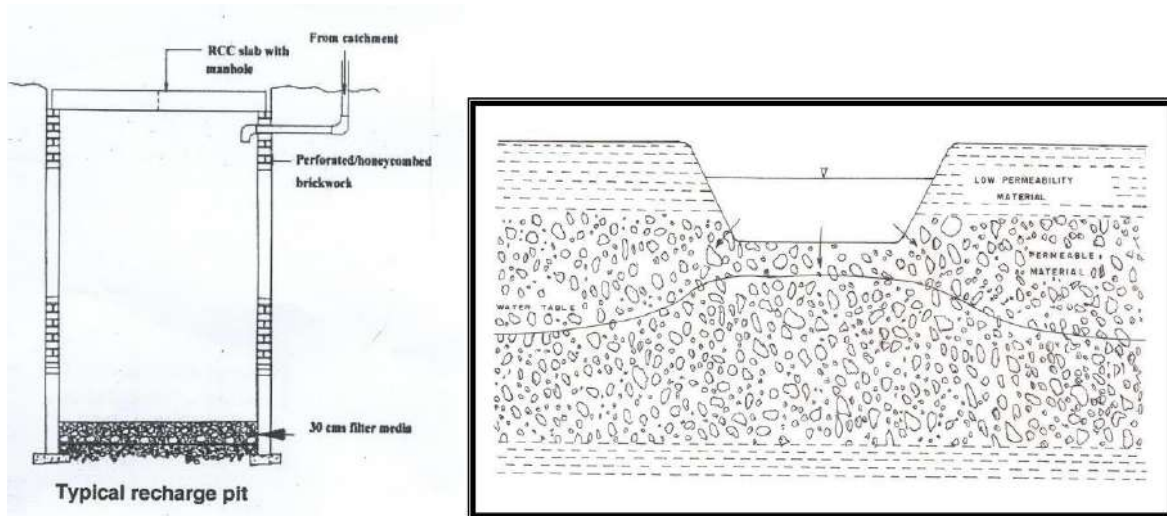


Figure 1. Typical Recharge Pit

Recharge pits should be constructed adjacent to handpumps in the villages as well as rooftop harvesting should be compulsory in every government buildings in the region.

Recharging of dug wells

Dug well can be used as recharge structure. Rainwater from the rooftop is diverted to dug wells after passing it through filtration bed. Cleaning and desalting of dug well should be done regularly to enhance the recharge rate. The filtration method suggested for bore well recharging could be used.

- Existing and abandoned dug wells may be utilized as recharge structure after cleaning and desilting the same.
- The recharge water is guided through a pipe from desilting chamber to the bottom of well or below the water level to avoid scouring of bottom and entrapment of air bubbles in the aquifer.
- Recharge water should be silt free and for removing the silt contents, the runoff water should pass either through a desilting chamber or filter chamber.
- Periodic chlorination should be done for controlling the bacteriological contaminations.

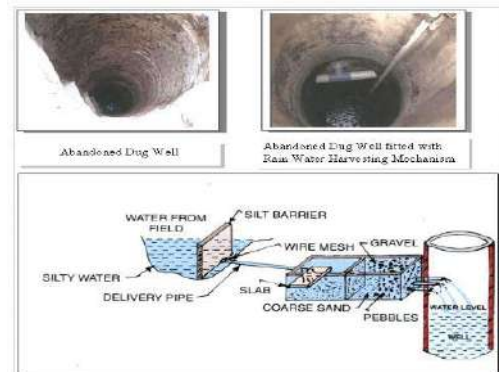


Figure 2. Dugwell Recharge

Percolation tanks

Percolation tanks are artificially created surface water bodies, submerging a land area with adequate permeability to facilitate sufficient percolation to recharge the ground water. These can be built in big campuses where land is available, and topography is suitable.

Surface run-off and roof top water can be diverted to this tank. Water accumulating in the tank percolates in the solid to augment the ground water. The stored water can be used directly for gardening and raw use. Percolation tanks should be built in gardens, open spaces and roadside green belts of urban area.

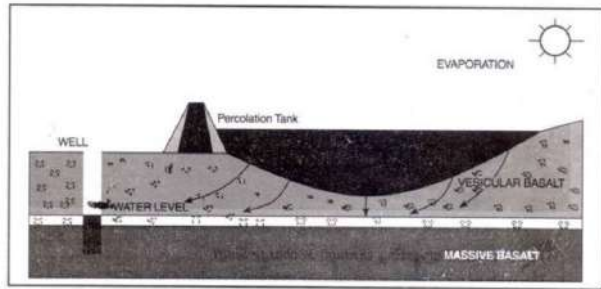


Figure 3. Percolation Tank

Recharge Shaft in waterbodies nearby villages

Recharge Shafts are similar to recharge pits but are constructed to augment recharge into phreatic aquifers where water levels are much deeper, and the aquifer zones are overlain by strata having low permeability. Further, they are much smaller in cross section when compared to recharge pits.

This is the most efficient and cost-effective technique to recharge unconfined aquifer overlain by poorly permeable strata. Recharge shaft may be dug manually if the strata are of non-caving nature. The diameter of shaft is normally more than 2 m. The shaft should end in more permeable strata below the top impermeable strata. It may not touch water table. The unlined shaft should be backfilled, initially with boulders/cobbles followed by gravel and coarse sand. In case of lined shaft, the recharge water may be fed through a smaller conductor pipe reaching up to the filter pack. These recharge structures are very useful for village ponds where shallow clay layer impedes the infiltration of water to the aquifer.

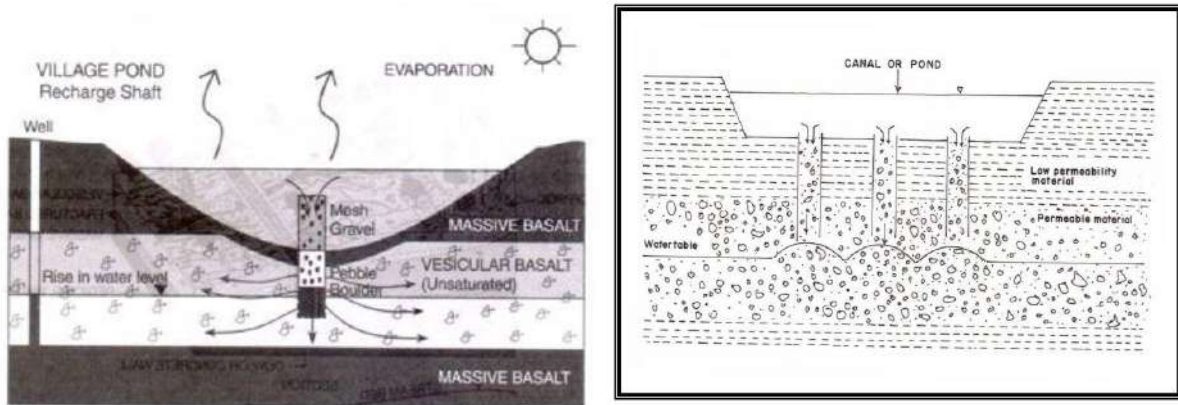


Figure 4. Recharge Shaft in Percolation Tank/ Waterbodies

It is seen that in rainy season village tanks are fully filled up but water from these tanks does not percolate down due to siltation and tubewells and dugwells located nearby remain dried up. The water from village tanks get evaporated and is not available for the beneficial use. By constructing recharge shaft in tanks, surplus water can be recharged to ground water. Recharge shafts of 0.5 to 3 m diameter and 10 to 15 m deep are constructed depending upon availability of quantum of water. The top of shaft is kept above the tank bed level preferably at half of full supply level. These are back filled with boulders, gravels and coarse sand. In upper portion of 1 or 2 m depth, the brick masonry work is carried out for the stability of the structure. Through this technique all the accumulated water in village tank above 50% full supply level

would be recharged to ground water. Sufficient water will continue to remain in tank for domestic use after recharge¹. (Source: Article shared by Puja Monadal)

Borewell Recharge

Bore well recharging system also consists of primary and secondary filter. Runoff water from the cultivated area is diverted towards bore well recharge unit through field trenches. It allows to enter in primary filter unit wherein the major sediments were arrested and water flows to the secondary filter unit. Secondary filter unit consist of excavation of soil around the bore well casing pipe by 2.5 m depth and 1.5 dia.

Gabion Structure

This is a kind of check dam being commonly constructed across small stream to conserve stream flows with practically no submergence beyond stream course. The boulders locally available are stored in a steel wire. This is put up across the stream's mesh to make it as a small dam by anchoring it to the streamside. The height of such structures is around 0.5 m and is normally used in the streams with width of about 10 to 15 m. The cost of such structures is around Rs.10 to 15000/-. The excess water overflows this structure storing some water to serve as source of recharge. The silt content of stream water in due course is deposited in the interstices of the boulders to make it more impermeable. These structures are common in the State of Maharashtra, Madhya Pradesh, Andhra Pradesh etc.



Figure 5. Recharge Shaft in Percolation Tank/ Waterbodies

Among all the techniques for ground water management, detailed study of hydrology, geology and aquifer mapping should be done, and management plan should be prepared for the region. Based on the sub strata condition and aquifer mapping, suitable technique of ground water management should be prepared and implemented.

Community Participation:

Government policies can be implemented better when the entire community is involved. Rain water harvesting/ watershed development involves raising of ground water table. This is essentially catchment-based activity. By doing RWH is isolated pockets appreciable result will not be achieved. Moreover, maintenance of RWH structures to ensure their sustenance is essentially to be done by individual members in the community only. If there is a resolution to implement say RWH & people are not convinced about its necessity/ utility, they may just construct a structure for compliance, but it may not serve the purpose or knowingly/ unknowingly somebody may contaminate water table. To avoid all this various section of the community, have to co-ordinate and work together that includes media, professional, Government Officials, NGOs, academicians and masses. Every section has equal important role to play for successful implementation of any government scheme.

Role of Media: Media can create awareness. It is the fastest means of sharing information and best platform for every section to react. In Indore Nayi duniaya & Dainik Bhaskar carried crusade of popularizing RWH. They continuously published information about necessity & simplicity of the technology and the success stories. This created awareness. Gatherings were then arranged to bring people together. They even made a fund to finance some projects. This mobilized and motivated people. In south also many magazines and newspapers give wide publicity to the RWH schemes and success stories from remotest villages.

¹ <http://www.yourarticlelibrary.com/water/rain-water-harvesting-in-india-need-methods-and-other-details/20917>

Role of Professionals: They have to provide technical guidance to the society and that to by going to the society. RWH is a site-specific technology. A common solution will not generally apply to entire city or area. Professionals have to study the situation & suggest schemes to the people, get them implemented, apprise people about maintenance techniques, cares to be taken and last but not the least check post installation results, after certain interval of time and suggest rectifications wherever required.

Role of G.O.s: Governments have to make necessary resolutions, set up an example by implementing the projects in their own premises. Work out incentives like aids - subsidies and / or concessions in assessment etc. to those who take up the schemes and disincentives like additional charges to those who do not take up the schemes.

Role of NGOs: The entire locality has to take up such projects. Work of bringing community together can be done easily either when there is severe crisis or by dedicated leadership or with enthusiastic grass route level hard workers. This can be assured with involvement of NGOs. NGOs has been acting successfully with Government in various fields especially for the problems involving complex socio-economic issues including RWH. NGOs can approach people in more informally. People would also react with them freely. They can apprise people about their rights & duties, benefits likely to arise to them from various Government's policies / scheme, avoid formation of power centers, encourage new ideas & pay individual attention to the people. Bringing community together is easier than keeping it together after the crisis is over. Unless awareness is created at all the levels the regular operation & Maintenance of the RWH works cannot be assured.

Role of academicians: They impart education to the society. Children and youth are the best enthusiastic medium to absorb and propagate technology. Activity has to start from school level. If children are convinced, they can influence their parents and secondly the tradition will be maintained.

Role of masses: They are the ones who will use, maintain and preserve the structures. If they don't care nothing will work. Mass education and public awareness for involvement of entire community especially the end users - the women folk is extremely important. They are the ones who suffer the most when there is water shortage. Generally, they will be the ones who will take care of these structures like many other house hold matters. They need to be taken in confidence and assigned with the responsibilities.

Here are some case study of successfully implemented various techniques of ground water management in rural areas of India.

Case study:1 Rainwater Harvesting and Artificial Recharge Gujra Sub-Watershed (Block: Patan, District: Durg) Chhattisgarh (Source: *SELECTED CASE STUDIES RAIN WATER HARVESTING and ARTIFICIAL RECHARGE, CGWB, Ministry of Water Resource, 2011*)

Location: Gujra Sub-Watershed, Block, Patan. The watershed lies in Patan block of Durg district within north latitudes 21°04'30" and 21°14'30" and east longitudes 81°23'00" and 81°34'00".

Implementing Agency: Public Health Engineering Department (PHED) and funded by the centrally sponsored accelerated rural water supply programme of Ministry of Rural Development, Govt. of India.

Year of Completion: 2003-05

Cost of the Project: Rs 2.67 crore

Average annual rainfall: 1200 mm.

Table - 1 Types and numbers of structures constructed in Gujra sub-watershed

Type of structure	Number of structure
Masonry stop dam	23
Percolation Tank	12
Boulder Check dam	25
Silt trap/Nala bund	13
Desilting of pond	28

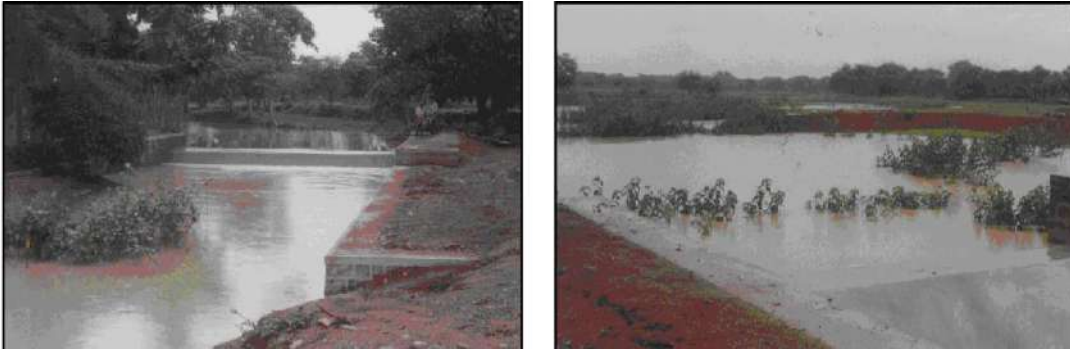


Figure 6. Check dam at Mehra Kala and Percolation tank at Tarri

Methodology:

Masonry dams: Stone masonry dams were constructed on 2nd and 3rd order streams having Span 10 to 12m, Height 1 to 1.5 m, Foundation (cement concrete) depth 1 to 1.2.

Boulder Check Dams: Constructed on 2nd order stream with Span 6 to 10m and Height 1 to 1.2m

Silt trap: These are simple masonry Structures of Height 0.5 to 0.7 m

Percolation Tank: With masonry west weir and earthen side bunds

Desilting of Ponds: Existing village ponds were desilted

Outcome: A set of 8 observation wells was established in the watershed to monitor the effect of the project. During the first three years (2001-2004), pre-monsoon water levels were in the range of 17 to 31m in all the observation wells. In the next three years (2005-2008), pre-monsoon water levels in these wells remained within 5 to 13m. Similarly, for the post monsoon period, water levels recorded in the initial two years were in the range of 14 to 23, which improved to 5 to 8m in the 3rd year. During the last 3 years, post monsoon water levels were recorded to be in the range of 2 to 6m.

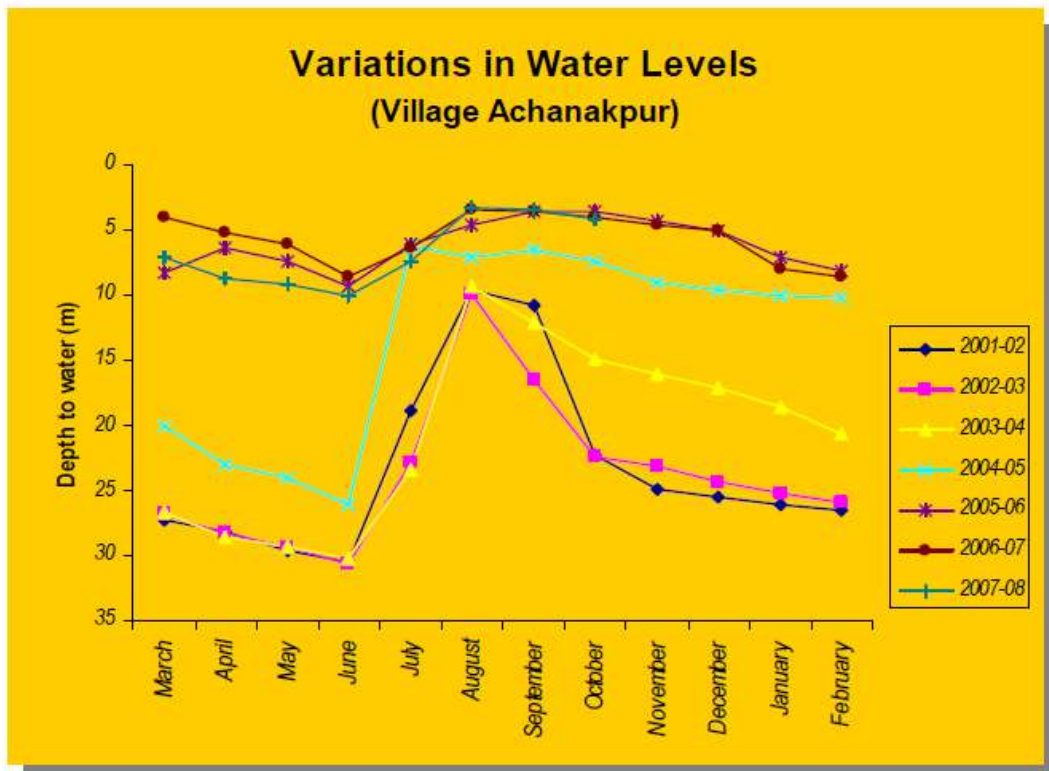


Figure 7. Monthly variations in water levels in different years in a representative observation well at Achanakour in Guira sub-watershed

The significant improvement in water level conditions, in turn, resulted in improvement of soil moisture conditions and agricultural production.

PART:3 - ANNEXURE

Case study:2: RAINWATER HARVESTING UNDER JOINT FOREST MANAGEMENT PROGRAMME - (Implemented by Department of Forest) at ALEKHUNTA VILLAGE, Chhatisgarh (Source: SELECTED CASE STUDIES RAIN WATER HARVESTING and ARTIFICIAL RECHARGE, CGWB, Ministry of Water Resource, 2011)

Location: Alekhunta village of Dhamtari district,

Implementing agency: forest management committee.

Methodology: a stop dam of 10m width was constructed along Futhamuda stream. The stored water was then distributed to different parts of the village with construction of 2 canals, one of 4 Km length and the other of 3 Km length. There was 350 acres of arable land and there was no irrigation facility.

Outcome: Provided irrigation facilities to the entire 350 acres (during kharif only) of land and resulted in 80% increase in agricultural productivity in the village.

Case study:3 WATER CONSERVATION MEASURES at KHONDRA VILLAGE, Block: Masturi, District: Bilaspur, Chhattisgarh (Source: SELECTED CASE STUDIES RAIN WATER HARVESTING and ARTIFICIAL RECHARGE, CGWB, Ministry of Water Resource, 2011)

Implementing agency: ACTION FOR FOOD PRODUCTION

Pre-project scenario:

- There was severe soil erosion by streams in the agricultural lands in foothill areas, rendering marginal farmers landless.
- No source of irrigation except one water harvesting structure that provided critical irrigation to approximately 30 acres of kharif crop i.e. Paddy.
- There were only two water harvesting structures (ponds) in the village that were utilized for washing, bathing, drinking water for cattle etc.

Type of Structures Constructed:

Gabion: One stream which is used to cause erosion to about 12 acres of land, one gabion has been constructed to reduce the runoff velocity of stream water, divert a part of it while letting the rest to spill over it.

One diversion canal was constructed to let the runoff diverted by the gabion to a pond that was constructed with the objective of storing the diverted water.

Cost of the Structure: Rs.15,000/-

Reclamation of 12 acres of land that was rendered unfit for cultivation thus providing livelihood option for the seven farmers who had virtually become landless because of erosion.

Creation of a water body (pond) that is used to provide critical irrigation for paddy in about 25 acres of land.

In addition, it is also used for pisciculture by women Self Help Groups (SHGs). Indirect benefit to about 50 acres of land in the form of protection from soil erosion the intensity of which has been reduced after the construction of the structure. About 15 families are benefited by it.

Gravity Irrigation Scheme: There was an existing water harvesting structure across one of the streams which was used for washing clothes, bathing and to meet drinking requirement of animals. A sluice gate installed at one side of it provided water for kharif crop in about 30 acres of land.

It was planned to increase the storage area of the structure and to install a gravity irrigation mechanism in it. Increase in the storage area would further reduce the intensity of soil erosion that the overflow from the structure was causing.

- A trench was dug for laying the pipe about 4m below the ground level and the strata was rocky.
- Every family contributed its own share of digging and time limit was fixed for it.
- It was interesting to note that the mechanism for controlling the flow of water through the pipe is an innovative approach where an iron rod has been fixed with concrete and a mechanism for lifting / bringing down has been built up.
- It reduced its cost and time required for construction.

Outcome: The scheme provided irrigation to 100 acres of paddy. When sowing was delayed in rest parts of the area, Khondra people could do it on time due to the scheme. The structure is expected to initiate second cropping in the village. About 75 farmers would get the benefit of the structure.

Case study: 4 Artificial Recharge Structures (Recharge Shafts) in Dewas district, M.P. (Source: *SELECTED CASE STUDIES RAINWATER HARVESTING and ARTIFICIAL RECHARGE, CGWB, Ministry of Water Resource, 2011*)

Location: 5 village tanks in Dewas and Tonkkhurd blocks,

District: Dewas

Structures: Recharge shafts **Expenditure:** Rs. 9.15 lakhs

Implementing Agency: Water Resources Department, Govt. of M.P.

Geology: Basalt

At some places in Dewas district it was found that dug wells in the vicinity of the village tanks were either dry or had very deep-water levels due to heavy siltation. Alternatively, when the tanks were de-silted before the onset of monsoon, no surface storage could be created for longer period of time as these tanks served as good percolation tanks. Hence, it was decided that recharge shafts should be constructed in these tanks keeping the top of the recharge shaft at 50% R.L of the tank so that there should be recharge to ground water as well as storage water for 'Nistar' purposes. After the construction of these recharge shafts, the water levels in the dug wells have shown a rise in water levels.



Figure 8. Recharge Shaft at Mendkichak District Dewas

Case study-7: Artificial Recharge Structures (Percolation Tank, Check dams, Cement plug & Gabion structures) in Tumar watershed, at Roopwali village, Mandsaur district (Source: *SELECTED CASE STUDIES RAIN WATER HARVESTING and ARTIFICIAL RECHARGE, CGWB, Ministry of Water Resource, 2011*)

Location: Tumar Watershed, Mandsaur district, M.P

Structures: Sikhedi Percolation tank, Roopawali check dam, Kheda check dam, Afzalpur Cement plug and Gabion structures (19 nos)

Expenditure: Rs. 23.48 lakhs

Implementing Agency: Water Resources Department, Govt. of M.P.

Geology: Basalt

Outcome: Water level trend analysis of observation wells located at village Roopawali reveals that there is a rise in water level in both pre & post –monsoon periods with rising rate 15cm/year and 22 cm/ year respectively. Water level at village Kheda shows a rising trend of 14cm/ year during post-monsoon

Case study-8: Artificial Recharge to Ground Water in Barkatia Watershed, Athgarh Block, Cuttack District
Approximate Project Area: 20.00 Sq. Km. (Source: *SELECTED CASE STUDIES RAIN WATER HARVESTING and ARTIFICIAL RECHARGE, CGWB, Ministry of Water Resource, 2011*)

Numbers and names of the villages: 20(Jemadeipur, Kapusingh, Sarkoli,Villages covered Oranda, Gurudijhatia, Kotar,Pithakhia, Bali, Baula, Chotiambmba,Sitarampur, Khamarnuagaon,Kaduanuagaon, Chhagaon, Sauria,Gobara, Belda, Danduria,Kolalathapangi, Moharिताila)

Project Execution by: HP Division, Bhubaneswar

Total expenditure: Rs. 54.76 lakhs

Total volume Recharge: 13 x 10⁶ m³

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4

Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Artificial Recharge Structures (ARS) constructed in the Barakatianalla

Sl. No	Location (Village)	Recharge Dug Well	Recharge BW	Recharge TW	Recharge Pit	Recharge Tank	Renovation of Tank	Check Dam
1	Sitarampur	1	-	1	1	-	-	-
2	Oranda	1	1	-	1	-	1	1
3	Bali	1	-	-	1	2	1	-
4	Jemadeipur	1	-	-	-	1	-	-
5	Sarkoli	1	1	-	1	2	1	-
6	Baula	-	-	-	-	-	1	-
7	Kapursingh	-	1	-	-	-	1	-
8	Kolathapangi	-	1	-	-	3	-	-
9	Souria	-	1	-	-	3	-	-
10	Pithakhia	-	-	1	-	-	-	-
11	Belda	1	-	-	1	3	-	-
12	Khamarnuagaon	1	-	-	1	-	1	-
13	Chotiamba	1	-	-	1	3	1	-
14	Gurudijhatia	3	-	-	3	-	1	-
15	Kotar	1	-	-	1	-	1	-
16	Danduria	2	-	-	2	-	1	-
17	Kaduanuagaon	2	-	-	2	-	-	-
18	Moharitaila	1	-	-	1	3	-	-
19	Gobara	2	-	-	2	-	-	-
20	Chhagaon	1	-	-	1	-	-	-
	Total	20	5	2	20	20	10	1

Impact Assessment: After execution of the above-mentioned structures for artificial recharge, the impact of recharge through renovation of existing pond, recharge tanks, rooftop rainwater harvesting structures, check dam established in the command areas as well as the catchments in the project area were monitored regularly. From the monitoring it was observed that on an average there is a rise of 1 - 2.40 m of water level in the pre-monsoon and 0.6 - 1.07 m in the post-monsoon period (figure.57 A&B). depth to water level during pre & post monsoon is given in Table.33. The quantum of recharge being around 55% of the total run off (13 X 106 m3). Artificial recharge structures constructed in the Barkatia block, Athgarh block, Cuttack district, Orissa is presented in figure 58 A-D.

Impact Assessment - Depth to water level in meters below ground level (in Dug Wells) Barkatia Watershed, Athgarh Block, Cuttack District.

SI No	Location	2003		2004		2005		2006	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Oranda	9.85	5.02	8.42	4.76	8.05	4.41	7.81	4.05
2	Bali	8.24	5.01	7.11	4.95	6.99	4.28	6.72	4.1
3	Gurudijhatia	8.42	6.32	7.80	5.77	6.03	5.25	5.9	5.06
4	Khamarnuagaon	8.80	6.15	8.48	5.98	7.72	5.69	7.49	5.33
5	Gobara	7.48	5.05	7.19	4.83	6.91	4.54	6.78	4.42
6	Kaduanuagaon	8.23	6.01	8.10	5.89	7.97	5.51	7.85	5.47
7	Belda	7.32	5.78	6.60	5.22	6.02	4.87	5.96	4.69
8	Chhoti Amba	9.53	7.64	8.65	7.17	8.53	6.98	8.39	6.84



Figure 9. Subsurface Dykes at Barwa Kalan, Ajnar sub basin, Rajgarh district

Case study-9: Demonstrative Artificial Recharge Project in Malur Taluk (Phase-II), Kolar Dist. Karnataka (Source: Water Shed Development Department, Govt. of Karnataka)
Implementing s

Artificial Recharge Structures (ARS) constructed in the Barakatianalla

Sl. No	Location (Village)	Recharge Dug Well	Recharge BW	Recharge TW	Recharge Pit	Recharge Tank	Renovation of Tank	Check Dam
1	Sitarampur	1	-	1	1	-	-	-
2	Oranda	1	1	-	1	-	1	1
3	Bali	1	-	-	1	2	1	-
4	Jemadeipur	1	-	-	-	1	-	-
5	Sarkoli	1	1	-	1	2	1	-
6	Baula	-	-	-	-	-	1	-
7	Kapursingh	-	1	-	-	-	1	-
8	Kolathapangi	-	1	-	-	3	-	-
9	Souria	-	1	-	-	3	-	-
10	Pithakhia	-	-	1	-	-	-	-
11	Belda	1	-	-	1	3	-	-
12	Khamarnuagaon	1	-	-	1	-	1	-
13	Chotiamba	1	-	-	1	3	1	-
14	Gurudijhatia	3	-	-	3	-	1	-
15	Kotar	1	-	-	1	-	1	-
16	Danduria	2	-	-	2	-	1	-
17	Kaduanuagaon	2	-	-	2	-	-	-
18	Moharitaila	1	-	-	1	3	-	-
19	Gobara	2	-	-	2	-	-	-
20	Chhagaon	1	-	-	1	-	-	-
	Total	20	5	2	20	20	10	1

Impact Assessment: After execution of the above-mentioned structures for artificial recharge, the impact of recharge through renovation of existing pond, recharge tanks, rooftop rainwater harvesting structures, check dam established in the command areas as well as the catchments in the project area were monitored regularly. From the monitoring it was observed that on an average there is a rise of 1 - 2.40 m of water level in the pre-monsoon and 0.6 - 1.07 m in the post-monsoon period (figure.57 A&B). depth to water level during pre & post monsoon is given in Table.33. The quantum of recharge being around 55% of the total run off (13 X 106 m3). Artificial recharge structures constructed in the Barkatia block, Athgarh block, Cuttack district, Orissa is presented in figure 58 A-D.

Impact Assessment - Depth to water level in meters below ground level (in Dug Wells) Barkatia Watershed, Athgarh Block, Cuttack District.

SI No	Location	2003		2004		2005		2006	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Oranda	9.85	5.02	8.42	4.76	8.05	4.41	7.81	4.05
2	Bali	8.24	5.01	7.11	4.95	6.99	4.28	6.72	4.1
3	Gurudijhatia	8.42	6.32	7.80	5.77	6.03	5.25	5.9	5.06
4	Khamarnuagaon	8.80	6.15	8.48	5.98	7.72	5.69	7.49	5.33
5	Gobara	7.48	5.05	7.19	4.83	6.91	4.54	6.78	4.42
6	Kaduanuagaon	8.23	6.01	8.10	5.89	7.97	5.51	7.85	5.47
7	Belda	7.32	5.78	6.60	5.22	6.02	4.87	5.96	4.69
8	Chhoti Amba	9.53	7.64	8.65	7.17	8.53	6.98	8.39	6.84

PART:3 - ANNEXURE

Case study: 10 : Demonstrative Artificial Recharge Project in Malur Taluk (Phase-II), Kolar Dist, Karnataka.

Location : Malur

District : Kolar Dist.

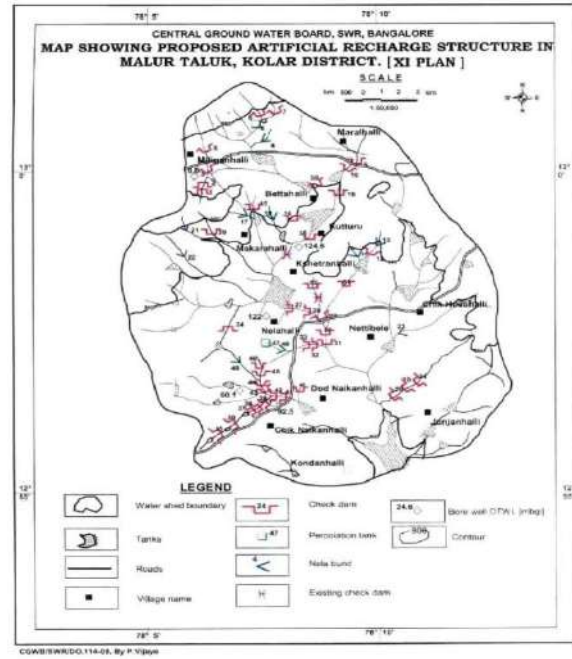
Type & No. of Structures : 52 (Check dam-40, Percolation tank-2, Nala Bund-10)

Implementing Agency : (Water Shed Development Department, Govt. of Karnataka)

Category of block/mandal/taluk : Over Exploited

Approved Cost (in lakh) : 109.158

Impact of the scheme : Improvement in Water level Dug wells showed rise between 0.77 to 2 m Bore wells showed rise between 1.0 to 1.76 m Change in yield of bore wells. There was increase of sustainability of pumping from 50 minutes to one hour. Yield of wells has increased in the range of 0.25 to 2.5 lps. **Change in irrigated area** The command area of wells in the project area has increased in the range from 0.2 to 2 hectares.



Map 1. Artificial Recharge Project in Malur Taluk (Phase-II), Kolar Dist., Karnataka



Figure 10. Check Dam Constructed at Malur Taluk



Figure 11. Percolation Tank Constructed at Malur Taluk



Figure 12. Nala Bund constructed in Malur Taluk

Annexure 12-1 : Use of Biofertilizer and Biopesticides

Use of Biofertilizer

Biofertilizer is a substance which contains living microorganism which, when applied to seed, plant surfaces, or soil, colonizes the inside of the plant and advances development by expanding the supply or accessibility of essential nutrient to the host plant. Biofertilizers are not manures. Biofertilizers add nutrients through the natural processes of fixing atmospheric nitrogen, solubilizing Phosphorus, and stimulating plant growth through the synthesis of growth promoting substances. Utilization of biofertilizers is one of the imperative segments of incorporated nutrient administration, as they are financially savvy and renewable source of plant nutrient to supplement the chemical fertilizer for economical farming. A few microorganisms and their relationship with crop plants are being exploited in the generation of biofertilizers.



Advantages of Biofertilizers:

1. **Soil and plant Health:** Most biofertilizers comprise of microorganisms that are engaged in the decomposition of organic matter and the breakdown of minerals into a solvent form that is helpful to plants.
2. **Environmental health:** One of the fundamental favourable circumstances of utilizing biofertilizers is to reduce the need of other forms of fertilizer, a large number of which have negative impacts in nature.

Biopesticides

Biopesticides are sorts of pesticides got from such regular materials such as animals, plants, microbes, fungi, virus (Microbial origin) and certain minerals. For instance, canola oil and baking soda have pesticidal applications and are considered as biopesticides. Biopesticides are generally less poisonous than regular pesticides. Biopesticides are generally less poisonous than regular pesticides. Biopesticides are generally target pests and related organisms. On the other hand, traditional pesticides that may also affect creatures for instance insects, birds and mammals.

Biopesticides come under three main categories:

1. **Biochemical pesticides:** They are normally occurring substances that control bugs and pests by non-toxic components. On the other hand, customary pesticides, that straightforwardly executes or kills the pests. Biochemical pesticides incorporate substances that meddle with mating, for example, insect's sex pheromones, and in addition different scented plant extracts that attract pests to traps.
2. **Microbial pesticides:** It comprise of a microorganism (e.g., a bacterium, fungus, infection, or protozoan) as the active ingredient. Microbial pesticides can control a wide range of pests, although each different active ingredient is moderately specific for its target pest. For instance, there are parasites that control certain weeds and other growths that execute particular insects.
3. **Plant-Incorporated-Protectants:** (PIPs) are pesticidal substances that plants deliver from hereditary material that has been added to the plant. For instance, researchers can take the gene for the BT pesticidal protein and bring the gene into the plant's own particular hereditary material. At that point the plant, rather than the BT bacterium, makes the substance that kills the pests. The protein and its hereditary material, however not simply the plant, are managed by EPA (Environmental Protection agency).



In conclusion it is clear that Biopesticide is becoming popular because of its favourable circumstances related with the environmental security, target-specificity, adequacy, biodegradability and appropriateness in the integrated pest management (IPM) programs. That's why; biopesticide is one of

the promising contrasting options to manage environmental pollution. In spite of the fact that potential use of biopesticides in ecological wellbeing is outstanding, it has gaining popularity because of the growing demand of organic food.

[To promote the use of bio pesticides in agriculture, Central Insecticide Board & Registration Committee has formulated simplified guidelines for registration of bio pesticides as compared to chemical pesticides. During provisional registration granted under Section 9 \(3B\) of The Insecticides Act, 1968, the applicant is allowed to commercialize the bio-pesticides, unlike chemical pesticides. Government of India through organic farming schemes of Paramparagat Krishi Vikas Yojana \(PKVY\) & Capital Investment Subsidy Scheme \(CISS\) aims for sustainable agriculture production with eco-friendly process in tune with nature, promoting organic inputs and chemical free agriculture produce for improving the health condition of the people.\(MOAFW\)](#)

Annexure 13.1 : Existing Tourism Facilities by MPTB

मध्यप्रदेश के समस्त नेशनल पार्क्स/ सेंचुरीज/ वन क्षेत्र के पास
किये निर्मित पर्यटन संबंधी अधोसंरचनाओं के संबंध में जानकारी

नेशनल पार्क/ सेंचुरी का नाम : सतपुड़ा टाइगर रिजर्व
जिला: होशंगाबाद

क्र.	निर्मित अधोसंरचना का नाम	स्थल/ ग्राम/ कम्पोनेन्ट क्र. (यदि वन क्षेत्र के अंतर्गत है) का नाम	खसरा क्र.	निर्मित क्षेत्रफल (वर्गफीट में) अथवा लम्बाई जो उपयुक्त हो	गूगल को ऑर्डिनेट्स	निर्मित सुविधायें/ उद्देश्य	रिमार्क
1.	बड़ा महादेव जनसुविधा केन्द्र	पचमढ़ी	P/252	1237.40	22.4674 78.4346	जनसुविधा केन्द्र	
2.	अप्सरा फॉल जनसुविधा केन्द्र	पचमढ़ी	P/296	914.60	22.4544 78.4395	जनसुविधा केन्द्र	
3.	बी फॉल जनसुविधा केन्द्र	पचमढ़ी	P/310	914.60	22.4751 78.4074	जनसुविधा केन्द्र	
4.	राजेन्द्रगिरि जनसुविधा केन्द्र	पचमढ़ी		1100.37	22.4460 78.4189	जनसुविधा केन्द्र	
5.	हवाई पट्टी जनसुविधा केन्द्र	पचमढ़ी		1100.37	22.4642 78.4064	जनसुविधा केन्द्र	
6.	रसोई ढाबा के पास जनसुविधा केन्द्र	पचमढ़ी		1525.87	22.4627 78.4274	जनसुविधा केन्द्र	
7.	चम्पक लेक जनसुविधा केन्द्र	पचमढ़ी		1560.87	22.4580 78.4184	जनसुविधा केन्द्र	
8.	बस स्टैण्ड पचमढ़ी जनसुविधा केन्द्र	पचमढ़ी	GLR No-93/136	1486.00	22.4744 78.4348	जनसुविधा केन्द्र	
9.	चम्पक बंगला	पचमढ़ी	शीट नं.6 प्लॉट नं.17	433312.10	22.4583 78.4169	म.प्र. पर्यटन होटल	
10.	ग्लेन व्यू	पचमढ़ी	शीट नं.11 प्लॉट नं.25	27927.04	22.4670 78.4256	म.प्र. पर्यटन होटल	
11.	रॉक एण्ड मेनोर	पचमढ़ी	अनुपलब्ध	4411.60	22.4649 78.4221	म.प्र. पर्यटन होटल	
12.	सतपुड़ा रिट्रीट	पचमढ़ी	शीट नं.23 प्लॉट नं.1/1/3	10727.93	22.4531 78.4267	म.प्र. पर्यटन होटल	
13.	हिलटॉप बंगला	पचमढ़ी	शीट नं.20 प्लॉट नं.15	325102.30	22.4632 78.4287	म.प्र. पर्यटन होटल	

*Area for Hill top bungalow is 32510.02 Sq.ft. as per comments received from MPSTDC vide Note sheet No. 274/MPTB/21 dated 10/12/2021.

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14.	अमलतास	पचमढी	शीट नं.12 प्लॉट नं.15	17040.28	22.4649 78.4253	म.प्र. पर्यटन होटल
15.	क्लब व्यू	पचमढी	अनुपलब्ध	14121.31	22.4694 78.4267	म.प्र. पर्यटन होटल
16.	देवदारू बंगला	पचमढी	अनुपलब्ध	14084.19	22.4736 78.4257	म.प्र. पर्यटन होटल
17.	कर्णिकार बंगला	पचमढी	अनुपलब्ध	9403.59	22.4736 78.4257	म.प्र. पर्यटन होटल
18.	पंचवटी	पचमढी	शीट नं. 12 प्लॉट नं. 01	16007.43	22.4685 78.4208	म.प्र. पर्यटन होटल
19.	हाईलेण्ड	पचमढी	GLR ०.119	35535.54	22.4769 78.4405	म.प्र. पर्यटन होटल
20.	वुडलेण्ड	पचमढी	शीट नं. 6 प्लॉट नं. 7	3617.51	22.4599 78.4152	म.प्र. पर्यटन होटल
21.	रिक्रियेशन जोन	पचमढी	शीट नं. 20 प्लॉट नं. 2	190536.52	22.4639 78.4265	हाट बाजार
22.	सहकार बंगला	पचमढी	शीट नं. 19 प्लॉट नं. 25	3184.96	22.4639 78.4267	म.प्र. पर्यटन स्टाफ क्वार्टर्स
23.	चम्पक लेक पर एडवेंचर एक्टिविटी	पचमढी		175430.48	22.4580 78.4184	जनसुविधा, एडवेंचर एक्टिविटी
24.	महादेव मन्दिर के आसपास पर्यटन सुविधाए	पचमढी		214235.32	22.4674 78.4346	जनसुविधा
25.	बारी आम लेक पर पर्यटन सुविधाए	बारी आम		10128.40	22.5093 78.4922	जनसुविधा प्रस्तावित

नोट 1. उक्त फार्मेट में मध्यप्रदेश के समस्त नेशनल पार्क्स/ सेंचुरीज में अथवा उनके पास निर्मित समस्त अधोसंरचनाओं का विवरण दिया जाना है। वाइल्ड लाइफ सर्किट में वन क्षेत्र के अंतर्गत वन विभाग द्वारा निर्मित पर्यटन अधोसंरचनाओं का विवरण भी दें।
2. अलग नेशनल पार्क/ सेंचुरी हेतु अलग फार्मेट में जानकारी भी दें।
3. नेशनल पार्क्स/ सेंचुरीज की सूची संलग्न हैं जिनकी जानकारी प्रस्तुत की जाना है। पर्यटन निगम के अंतर्गत कार्यरत होटल/ रिसोर्ट एवं अन्य अधोसंरचनाओं की जानकारी भी दें।

हस्ताक्षर
कार्यपालन यंत्री
होशंगाबाद संभाग

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

मध्यप्रदेश के समस्त नेशनल पार्क्स/ संचुरीज/ वन क्षेत्र के पास किये निर्मित पर्यटन संबंधी अधोसंरचनाओं के संबंध में जानकारी

नेशनल पार्क/ संचुरी का नाम : सतपुड़ा टाइगर रिजर्व
जिला: होशंगाबाद

क्र.	निर्मित अधोसंरचना का नाम	स्थल/ ग्राम/ कम्पोनेन्ट क्र. (यदि वन क्षेत्र के अंतर्गत है) का नाम	खसरा क्र.	निर्मित क्षेत्रफल (वर्गफीट में) अथवा लम्बाई जो उपयुक्त हो	गूगल को ऑर्डिनेट्स	निर्मित सुविधायें/ उद्देश्य	रिमार्क
1	बाइसन रिसोर्ट मढ़ई	ग्राम सारंगपुर	35/1	39704.40	22.576773 78.143217	12 आवासीय कक्ष, रेस्टोरेंट, किचिन, हॉल, कॉमन टायलेट, स्टाफ क्वार्टर्स, प्रबंधक आवास स्वीमिंग पूल, स्टोर, पेनल रूम, रिसेप्शन, एस.टी.पी. गार्डन, लॉन, पानी की टंकी, पार्किंग, वॉच टॉवर इत्यादि कार्य	
			35/2	68326.00	22.576625 78.143748	पार्किंग, जेद्दी	
2	तवा रिसोर्ट तवा	तवा नगर		107600.00	22.559861 77.961418	10 आवासीय रूम, कॉफ्रेस हाल, किचिन, रिसेप्शन, लॉबी, डोरमेटी, कॉमन टायलेट, प्रबंधक आफिस, प्रबंधक आवास, स्टाफ क्वार्टर्स, फस्टएड रूम, वॉच टॉवर, पार्किंग, आर.सी.सी. जेद्दी, प्लेटफार्म, एस.टी.पी. इत्यादि कार्य।	

हस्ताक्षर 29/01/21
कार्यपालन यंत्री
होशंगाबाद संभाग

*Dhasai Eco-centre with area of 406728.00 Sq.ft. is located at N 22°19'56.20", E 77° 57'07.22" as per comments received from MPSTDC vide Note sheet No. 274/MPTB/21 dated 10/12/2021.

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Annexure 13.2 : Existing tourism buildings in Pachmarhi

क्र०	शीट न०	प्लॉट न०	रकबा वर्गफुट में	रिकार्ड के अनुसार	मौका अनुसार	रिमार्क
1	1	3	2927	खुला क्षेत्र नजूल	वनस्थली कॉर्टेज साडा द्वारा नीलाम	साडा द्वारा लीज दिया गया है।
1	1	4	25524	खुला क्षेत्र नजूल	वनस्थली कॉर्टेज व सडक साडा द्वारा नीलाम	साडा द्वारा लीज दिया गया है।
1	1	14	49995	रिक्त भू-खण्ड	वनस्थली कार्टेज एमपीटी	साडा द्वारा लीज दिया गया है।
2	2	5/1	180618	रैस पार्क सडक	रैसकौर्स सडक व पौलौ गार्डन	
4	4	2	221748	डापडैन बंगला	मघुबन बंगला पीडब्लूडी	
5	5	1	631893	खुला क्षेत्र	नीलाम्बर हौटल बना है एम पी टूरिस्ट	
6	6	5	29199	खुला क्षेत्र	वुडलैण्ड एण्डवैण्चर क्लब एमपीटी	
6	6	6	187614	खुला क्षेत्र	वुडलैण्ड एण्डवैण्चर क्लब एमपीटी	
6	6	7	170225	खुला क्षेत्र	वुडलैण्ड एण्डवैण्चर क्लब एमपीटी	
6	6	17	283446	लण्ड्स डाउन हाउस चम्पक	चम्पक बंगला एमपी टूरिस्ट	
	6	24	8171	रिक्त भू-खण्ड	वुडलैण्ड एण्डवैण्चर क्लब एमपीटी लगभग 4000 वर्गफुट	
	9	11	41007	उच्च विश्राम भवन 3	कर्णिकार हौटल एमपीटी	
10	10	3	200546	विश्राम गृह इन्सपैक्शन बंगला	पी.डबल्यू. डी. आफिस, डी.आई.बी., डिस्ट्रिक्ट इन्सपैक्शन बंगला	
10	10	6	271073	पचमढी हौटल	औल्ड हौटल	
10	10	7	103731	उच्च विश्राम भवन 1	संजय गाँधी संस्थान	
10	10	8	261734	पचमढी क्लब	क्लब बिल्डींग, टेनिस ग्राउण्ड, सर्वेन्ट क्वाण्टर्स एम.पी.टी.	
10	10	9	207872	विश्रान्ति गृह सर्किट न० 2	दैवदारु हौटल एमपीटी	
	10	13/4, 14/3	30267	मौ० जाकिर मौ० अमीर दौनौ पिता अब्दुल गफूर खान मुसलमान	चुनमून हौटल, पांडव रीट्रीट हौटल	लीज अवधि दिनांक 31.03.2014 को समाप्त।
	10	13/5, 14/4	8172	मकान मय अहाता	इस भूमि पर मौकै पर शफी खान पिता वहीद खान का मकान बना हुआ है तथा इसी भूमि पर हिल व्यु ग्रीन हौटल 4 कमरै स्थित है। हौटल वर्तमान में संचालित है।	लीज अवधि दिनांक 15.07.1984 को समाप्त।

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क्र०	शीट न०	प्लॉट न०	रकबा वर्गफुट मै	रिकार्ड कै अनुसार	मौका अनुसार	रिमार्क
10	10	13/2, 14/1	53688	हिल ब्यू बंगला	मौकै पर आदित्य नारायण पिता श्यामकिशोर अग्रवाल का बंगला बना है। एवं सर्वेण्ट भी स्थित है। शेष भूमि पर गार्डन बना हुआ है। वर्तमान मै स्वयं का कब्जा है।	लीज अवधि दिनांक 31.03.2014 को समाप्त।
11	11	25	378428	ग्लैन ब्यू बंगला सुमनै	यथावत	
12	12	1	492432	रॉकएण्ड बंगला, शैखर बंगला	यथावत तहसील ऑफिस कै पीछे पीडब्लूडी शासकीय आवास	
12	12	2	198538	गोल्फ कौर्स	यथावत	
12	12	4	876441	गोल्फ कौर्स	पम्प हाउस अतिक्रमणकर्ता :- 1. सुमत्राउदय पत्नि गनैश उदय 2. पारौबाई पत्निगनैश उदय 3.पवन उदय/गनैश उदय 4.धीरज उदय/गनैश उदय 5.नरैश/रगनया इंदौरकर 6. संतौष/सन्दरलाल मवासी 7. राजेश/शिवप्रसाद कुशावाहा 8. सरवनआदिवासी 9. धनपाल/मदभान 10.प्रदीप/चुन्नीलाल चौरसिया 11. हरिशंकरसिंह /मलखान सिंह 12.शांतिबाई/शंकरलाल उक्त सभी कै द्वाराझौपड़ी बनाकर कब्जा लिया गया है।	
12	12	15	120164	सैण्ट ब्लू बंगला	अमलतास बंगला14एमपीटी टूरिस्ट142	
12	12	21	40497	तहसील कार्यालय	तहसील कार्यालय यथावत साडाकार्यालय, वन विभाग क्वार्टस 1. राहुलपवार/भूरालाल पवार 2. पवन/मनमौदकहार 3. जयसिंह 4. रमेश धुर्वे/नन्हैलालधुर्वे 5. हरवंश/साधुसिंह कहार 6. वर्षानागवंशी /रामसिंह नागवंशी 7. दर्शन/खुमानसिंह पूर्विया 8.बंजरगं/बलरामस्वामी एवं केंद्रीय आयोग का कार्यालय	
12	12	22	171721	विलसन लॉज	बाईसन लॉज	
12	12	24	62859	रैन लॉज, बालकीडा सील	बाल उधान यथावत	
	14	6	4628	खुला क्षेत्र	गोल्फ ब्यू बंगलै की बाउण्ड्रीवॉल बनी है।	

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क्र०	शीट न०	प्लॉट न०	रकबा वर्गफुट में	रिकार्ड के अनुसार	मौका अनुसार	रिमार्क
	14	7	8746	खुला क्षेत्र	गोल्फ व्यू बंगले की बाउण्ड्रीवॉल बनी है।	
	14	8	166209	ग्राफ व्यू बंगला	ग्राफ व्यू बंगला बना हुआ है।	
14	14	9	175333	रॉयल हॉटल	रॉयल हॉटल एवं कॉन्टेनेस बनै है।	
	14	15	77220	रैस्ट हाउस रैलवे विभाग	यथावत	
15	15	2	173491	रॉयल हॉटल	म०प्र० शासन नजूल। उक्त भूमि एवं प्लॉट पर विनय कुमार साहू कैयर टैकर के रूप में 2 वर्ष से हॉटल संचालन का कार्य कर रहा है।	इस भूमि से संबंधित प्रकरण हाईकोर्ट में विचाराधीन है।
15	15	5	101860	वनस्थली विश्राम गृह	वनविभाग विश्राम गृह, वनस्थली	
16	16	2	48427	पीएडी और कर्मचारियों के विश्राम गृह कू०वि०	यथावत	
17	17	13	27225	मकान मय अहाता नवभारत कुटीर, समर हाउस	समर हाउस हॉटल बनी है। समीर माहेश्वरी का कब्जा है। इसमें 30 कमरे बनै है।	2024 तक की राजस्व अभिलेख में दर्ज है।
18	18	5	309174	क्लब व्यू बंगला	आर्मी बंगला , पॉवर हाउस म०प्र० विद्युत वितरण विद्या मंदिर, पीडब्लूडी / एमपीटी	
18	18	6/1 च	8801	लैकव्यूह बंगला फ्रैंड्स फॉरेन मिशन बंगला हौशंगाबाद	खाली भूमि	
18	18	6/1घ	112480	लैकव्यूह बंगला फ्रैंड्स फॉरेन मिशन बंगला हौशंगाबाद	खाली भूमि	
18	18	6/1ब	41257	लैकव्यूह बंगला, श्रीमति सुभाषनी दैवी पत्नि लै०क० बी०कै० द्विवैदी	स्टोर रूम , स्वयं का निवास, 1 बंगला स्थित है तथा शेष भूमि में गार्डन स्थित है।	
18	18	6/2	18098	लैकव्यूह बंगला सावत्री बैवा पी०सी० दैवैसर ,मधु बैवा अरविंद दैवैसर, कु० अवतिका एवं कनिका वल्द अरविन्द दैवैसर पालक माँ मधु बैवा अरविन्द दैवैसर सा० पचमढी	600 वर्गफुट के 5 रूम, 1 कच्चा गैरिज स्थित है। शेष समस्त भूमि रिक्त है। मौके पर सावत्री बैवा पी०सी० दैवैसर ,मधु बैवा अरविंद दैवैसर, कु० अवतिका एवं कनिका वल्द अरविन्द दैवैसर पालक माँ मधु बैवा अरविन्द दैवैसर सा० पचमढी	
	19	13/2	6891	बंगला मैजर एरिक फ्रांसिस नागपुर	खालसा लैक व्यू रिसोर्ट पचमढी हॉटल बनी हुई है जिस पर दीपू खालसा का कब्जा है।	बन्दोबस्त तक लीज।
19	19	21	105837	विगरेज बंगला सचिव गिरजाघर कमैटी , लाल बंगला	मौके पर एक बंगला, एक हॉल स्थित है।	

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क्र०	शीट न०	प्लॉट न०	रकबा वर्गफुट में	रिकार्ड के अनुसार	मौका अनुसार	रिमाक
19	19	30	116795	ग्लैन व्यु बंगला, रैव्हरैन्ट फ़ैडस सुपीरियर कैथोलिक	इस भूमि पर दौ कमरै सर्वेण्ट क्वाटर स्थित है। शेष भूमि रिक्त है। कब्जा स्वयं का है।	न्यायालय अविअ पिपरिया के रा०प्र०क 0014/अ-20-1/2018-19 के आदेशानुसार रिकार्ड दुरुस्त किया गया। लीज अवधि दिनांक 15.04.2044 तक।
20	20	14/1	197365	म०प्र० शासन नजूल	स्टैट कैथोलिक बंगला श्री डैनिंस टौरी - पी.टौरी, रौरी कॉटेज सा० पचमढी, एआर के रिसोर्ट बना हुआ है तथा कृपाटौरी का मौके पर कब्जा है।	लीज अवधि पूर्ण हौनै के उपरांत शासकीय मध्यप्रदेश शासन नजूल दर्ज किया गया है। उक्त भूमि के संबंध में प्रकरण माननीय सर्वोच्च न्यायालय में प्रचलित है।
20	20	15	467930	माउन्ड लैजैन्ड बंगला पीडब्लूडी, प्रस्थल बंगला	म०प्र० राज्य पर्यटन विभाग का कब्जा है। जिसमें एक बंगला, 13 सर्वेण्ट क्वाटर बनै है। तथा एक क्वाटर सफाई कर्मचारी हेतु बना है जिसमें निवासरत है।	हिल व्यू लीज
20	20	17/1	44853	सनसेट कॉटेज श्री डी०बी० पामर-लै० श्री सार्क पामर सनसेट कॉटेज पचमढी	आदिवासी छात्रावास संचालित है।	पुलिस अधीक्षक बंगला
21	21	7/2	8292	मानसैवी सचिव पचमढी क्लब	पचमढी क्लब	
21	21	7/1	238292	ग्राफलिक मानसिंह सचिव पचमढी	न्यू हौटल बनी है। कब्जा साडा पचमढी का है।	
21	21	18	158041	फ़ैरनवैली बंगला श्रीमति कौडूमाडरी कृष्णा प्रिया जो० श्री कै. शेष गिरी राव सा. सायसदन रसलाम सैठ रामचंदपुरम ईस्ट गौदावरी डिस्टिक आंध्रप्रदेश वर्तमान पता श्याम विहार पचमढी	मौके पर 12000 वर्गफुट भूमि पर महर्षि आश्रम बना है। जिसमें कुल 82 कमरे एवं 8 हॉल स्थित है। वर्तमान व्यवस्थापक विनोद परसाई/ब्रम्हानंद महर्षि प्रबंधक का कब्जा है।	लीज वर्ष 2008 में समाप्त हो चुकी है। महर्षि आश्रम की ओर से विनोद परसाई का कब्जा है। प्रकरण न्यायालय उच्च न्यायालय जबलपुर में विचाराधीन है।
25	25	2	431175	झील नजूल प्रबंधक सि०वी०	यथावत साडा नीलाम करता है।	
32	32	3	351063	हवाई पट्टी नजूल	पैरासिलिंग हो रही हैं	
	32	4	313241	खुली जमीन नजूल	एडवैचर 1.00 ए० मै बना हुआ है एवं 225 वर्गफुट भूमि पर झौपडी बनी हुई है।	
36	36	3	191645	हवाई पट्टी नजूल	यथावत	
36	36	4	106239	हवाई पट्टी नजूल	यथावत	

(Data Source: Office of Tehsildar, Piapariya Block, Hoshangabad)

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Annexure 13.3 : List of Tourism Facilities in STR

No.	Name	Year of Manufacture	AC	Non AC	Total	Swimming Pool Yes or No	Date of receipt of approval from Tiger Reserve	meeting room Yes or No
1	The Madhai Resort	2011-12	12	-	12	No	-	No
2	Aawas at Madhai	2016	7	-	7	Yes	-	Yes
3	Bison Lodge	2016	12	-	12	Yes	-	No
4	Sunshine	2010	6	6	12	No	-	Yes
5	Hotel Satpura Valley	2009	-	8	8	No	-	No
6	Dream View Heritage	2020	10	-	10	Yes	-	No
7	Madhai Riverside Lodge	2007	11	2	13	No	-	Yes
8	Anmol Resort	2014	6	4	10	No	-	Yes
9	Satpura Safari Resort	2011	-	10	10	No	-	Yes
10	Satpura Jungel Retreat	2009	8	8	16	No	-	Yes
11	Forsyth Lodge	2009	12	-	12	Yes	-	No
12	Cheetal Resort (Now Wilder Nest)	2012	12	-	12	Yes	-	Yes
13	Goldmark	2018	9	-	9	Yes	-	No
14	Denwa Backwater Escape	2013	14	-	14	Yes	-	No
15	Reni Pani Jungle Lodge	2010	16	-	16	Yes	-	No
Home Stay								
1	Panchtatva villa	2020	4	-	4	No	-	No
2	Shree Karishna Home Stay	2018	-	1	1	No	-	No
3	Vikas Home Stay	2020	-	1	1	No	-	No
4	Farm House	2018	6	-	6	No	-	No
5	Stapura River view	2010	-	2	2	No	-	No

(Data Source: Office of Satpura Tiger Reserve)

No.	Name & Address of Hotel/Resort	Name of owner / Manager	Room Number	Date of receipt of approval from Tiger Reserve
1	New Hotel	Mr. Sthapak	56	-
2	Satpura Retreat Hotel	au Mine	10	-
3	Glen View Hotel	Mr. Pradeep Kher Manager	25	-
4	Highland Hotel	Naik ji	40	-
5	hill top bangla	Mr. Yogendra Choudhary Manager	5	-
6	Nandan One MPT	Mr. Itihas Choudhary Manager	12	-
7	Amaldas Hotel	Mr. Yogendra Choudhary Manager	15	-
8	Rock and Manor, M.P.T.	Mr. Yogendra Choudhary Manager	6	-
9	Nilambar Hotel	Mr. Yogendra Choudhary Manager	6	-
10	Greendale Hotel	Mr. Anjali Singh Irshad Mohd. No.	23	-
11	Champak Bungalow Hotel MPT	Shri A.K.Khan	32	-
12	Woodland Bungalow, MPT	Mr. Vinay Sahu	10	-
13	Karnikar Hotel & Deodaru	Mr. Digambar Sahu	17	-
14	Old Hotel	Mr. Nandkishore	10	-
15	RK Resort Tory Carthage Hotel	Shri Kripa Shankar Tory NS. henna	20	-
16	Arch Resort Hotel	Shri Kripa Shankar Tory Munawwar Hassan	25	-
17	Golf View Hotel	Mr. Puneet Maheshwari	32	-
18	Hotel Rock View	ruksana parveen Mr. Ali Qureshi	10 28	- -
19	Indraprastha Panchmarhi	Mr. Rajesh Jaiswal Owner	25	-
20	Amrapali Hotel, Pachmarhi	Mr. Rajesh Yadav Mohd.	18	-
21	Natraj Hotel, Pachmarhi	Mr. Ramesh Chaurasia Mohd.	17	-
22	Meghdoot Hotel, Pachmarhi	Mr. Nandlal Lidwani Mr. Sanjay Lidwani	7	-
23	Sapna Hotel, Pachmarhi	Shri Mukesh Panjwani Mo. No.	12	-
24	Paradise Hotel, Pachmarhi	Mr. Rajkumar owner Mr. Shobharam Manager	6	-
25	Khalsa Hotel, Pachmarhi	Mr. Amrit Pal Singh	16	-
26	Park New Hotel, Pachmarhi	NS. Aleem Qureshi owner Mr. Raju Manager	4	-

No.	Name & Address of Hotel/Resort	Name of owner / Manager	Room Number	Date of receipt of approval from Tiger Reserve
27	Bhagirath Hotel	Mr. Gurcharan Singh Malik	10	-
		Mr. Simrandeep Manager		
28	Manjushree Hotel	Mr. Premchandra Gupta Proprietor	23	-
		Mr. Kamlesh Yadav, Manager		
29	Misti Meadows, Pachmarhi	Mr. Chanakya Bakshi owner	28	-
		Mr Jagdish Jatav Manager		
30	Panchmarhi Hotel	Mr. Rohit Maheshwari Owner	32	-
		Mr. Rahul Maheshwari Manager		
31	Sanket Hotel	Mr. Ramesh Chandra Shahu Owner	10	-
		Mr. Kamlesh Manager		
32	Pareeksha Hotel, Pachmarhi	Mr. Govind Agarwal Owner	6	-
		Mr. Vikram Singh Manager		
33	Shrinath Hotel	Shree Geeta Maheshwari Owner	6	-
		Mr. Saurav Thakur Manager		
34	Jaypales Hotel	Mr. Hirendra Singh Thakur Proprietor	14	-
		Mr. Vijay Thakur Manager		
35	Gurukripa Hotel, Pachmarhi	Mrs. Sapna Malik	8	-
		Mr. Binder Sardar Manager		
36	Payal Cortez, Pachmarhi	Mr. Shashank Shahu Malik	7	-
37	Pushpakdham Hotel, Pachmarhi	Mr. Brajmohan Shahu Malik	18	-
		Mr. Kanhaiya Manager		
38	Pagoda Hotel, Pachmarhi	Mr. Vishal Shahu Malik	8	-
39	Paradise Home Stray, Hotel	Shri Laxman Das Yug Owner	9	-
40	Agarwal Hotel, Pachmarhi	Mr. Ramesh Agarwal Proprietor	12	-
		Mr. Barelal Raghuvanshi, Manager		
41	Satpura Satpura Safari Hotel	Mr. Aditya Jain, Manager	15	-
		Mr. Alkesh Jain Owner		
42	Shri Krishna Hotel Pachmarhi	Mr. Sanjeev Jaiswal Owner	6	-

No.	Name & Address of Hotel/Resort	Name of owner / Manager	Room Number	Date of receipt of approval from Tiger Reserve
43	Raj Bihar Hotel Panchmarhi	NS. Dharmaraj Malik	7	-
		Mr. Yogesh Raj Manager		
44	Himalaya Hotel Pachmarhi	Mr. Abdul Ghani Malik	8	-
		Shri Sitaram Manager		
45	Vinayak Hotel Panchmarhi	Mr. Vinay Jaiswal	11	-
46	Krishna Hotel Panchmarhi	Mr. Deepak Jaiswal Owner	4	-
47	Angel Hotel Pachmarhi	Mr. Naseem Qureshi Owner	7	-
		Mr. Rizwan Qureshi Manager		
48	Giriraj Hotel	Mr. Ashish Maheshwari Owner	6	-
49	Nilkamal Hotel	Mr. Jitendra Gupta Proprietor	5	-
50	Shilpa Hotel	Mr. Kanhaiya Lal Malik	6	-
51	Abhilasha Hotel, Pachmarhi	Mr. Arvind Kasaudhan Owner	10	-
		Mr. Gaurav Gupta Manager		
52	Balaji Hotel	Mr. Vijay Kumar Shahu Owner	5	-
		Mr. Kautak Manager		
53	Vijayashree Hotel	Mr. Jayaprakash	5	-
		Mr. Ghanshyam		
54	Pratik Hotel	Mr. Shyamsundar Rahi	7	-
		Mr. Shishir Rahi		
55	Royal Hotel	Mr. Qurban Hussaini	6	-
		Mustag Hussaini		
56	Neelkanth Hotel	Mr. Ankit Kumar Dubey	7	-
		Mr. Devendra Manager		
57	Prayag Hotel	Shri Omprakash Kannoja	0	-
		Hemlata Kannoja		
58	Mrignayani Hotel	Smt. Lata Jayeshwal	5	-
		Shri Shivnarayan Jayeshwal		
59	Jain Hotel	Mr. Motilal Jain	8	-
		Mr. Ankit Jain		
60	mountain green	Mr. Santos Jain	5	-
		Mr. Sandeep Jain		
61	Amar Palace Hotel	Mr. Sumit Sahu	8	-
62	Rajalakshmi Hotel Pachmarhi	Mr. Manish Jayeshwal Owner	6	-

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No.	Name & Address of Hotel/Resort	Name of owner / Manager	Room Number	Date of receipt of approval from Tiger Reserve
63	D Lite Hotel	Mr. Santosh Khanna Owner	20	-
		Mr. Vicky Khanna		
64	Banjara Hotel Pachmarhi	Mr. Rakesh Jain	10	-
		Mr. Manish Jayeshwal Manager		
65	Taj Resort Pachmarhi	Mr. Pyarelal Jayeshwal Owner	10	-
		Mr. Rajendra Jayeshwal		
66	Pandav Hill Pachmarhi	Mr. Sandeep owner	15	-
		Mr. Yashwant Singh Manager		
67	Balyu Moon Hotel, Pachmarhi	Mr. Goiz Hussain Malik	15	-
		Mr. Manager		
68	Pandav Hotel	Mr. Rajesh Kabra Owner	20	-
		Mr. Anoop Shahu Manager		
69	Kachnar Hotel	Mr. Kamal Dhoot Owner	12	-
70	City Palace Hotel	Mr. Sudanshu Shahu Manager	9	-
71	Arihant Hotel	Mr. Kamlesh Jain Owner	14	-
		Mr. Rajkumar Khurana Manager		
72	Five Ears Hotel	Mr. Aslamqureshi Malik	9	-
		Mr. Akrang Choudhary Manager		
73	Bombay Resort Pachmarhi	Mr. Iqbal Qureshi Malik	10	-
		Mr. Kaif Khan Manager		
74	Hotel Siddhi Vinayak	Mr. Rajesh Kannaujiya Owner	8	-
75	Pandav Retreat	Mr. Gopal Kabra owner	13	-
76	Abhimanyu Hotel	Mr. Hirachand Juneja	12	-
		Mr. Kapil Juneja Manager		
77	Oberoi Hotel	Mr. Ranjit Singh Malik	0	-
		Mr. Kamlesh Yadav Manager		
78	Gokuldham Hotel	Mr. Neeraj Kabra Owner	0	-
79	Madhurmilan Hotel	Mrs. Harjeet Corps Owner	0	-
		Mr. Jagjit Singh Manager		
80	Umashree Hotel	Mr. Sunil Gupta Proprietor	19	-
81	Panchmarhi Regency	Shri Bhagwandas Maheshwari	12	-
		Mr. Rakesh Maheshwari Manager		

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No.	Name & Address of Hotel/Resort	Name of owner / Manager	Room Number	Date of receipt of approval from Tiger Reserve
82	Sanskar & Ambashree Hotel	Mr. Jaiprakash Gupta Proprietor	21	-
83	Shiva Pallace Hotel	Sri Shailandra Patel	17	-
		Himanshu Gupta		
84	Sir krishna Hotel	Sri Krishna Choukhada	12	-
		Sri Ajay Mahashweri		
85	The Midland Hotel	Sallauddin Siddhqui	0	-
		Sri Ghanshyam Sahu		
86	Samar House Hotel	Samir Malik	30	-
		Sri Gopal		
87	Chunmun Cottage	Atar Khan	21	-
		Kamil Khan		
88	Hotel Suryam	Dr. Om Prakash Agrawal	10	-
		Shri Rishiraj		
89	Infinium Cottage	Col. Balwant Rao		-
90	Yadav Residency	Shri Om Prakash Yadav	0	-
91	Krishna Residency	Shri Pavan Jaiswal	0	-
92	Resort Panarpani, Village Pagara	Shri Kamal Dhoot S/o. Purshottam Dhoot	5	-
93	Pachmarhi Foothill Cottage, Village Singanama Panchayad Singanama, Tahsil Pipariya	Shri Nilesh Vyas	11	-
94	Singanama Farm Resort, Village Singanama, Tahsil Pipariya	Shri Gurucharan Singh	8	-
95	Ecotel Pachmarhi, Village Chakar, Panchayat Singanama, Tahsil Pipariya	Shri Chanakya Bakshi	24	-
		Shri Durgesh Yadav		
96	Denva Winds, Chhirrai	Shri Aman Oberai	40	-

(Data Source: Office of Satpura Tiger Reserve)

Annexure 13.4 : Carrying capacity based on Road by Method of MOEFCC guidelines

Alimod Baruth Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- i. Only vehicular movements on roads are permitted
- ii. The “standing area” is not relevant, but “closeness” between vehicles is important
- iii. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- iv. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- v. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- vi. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	To Alimod	17.88	0	0	1.25	0	0	0.000	1.714
2	Alimod to Baruth	9.81	0	0	0	0	0	0.000	1.714
3	Baruth to Chhatiam	12.21	0.25	0	7.5	0	0	0.000	1.714
	Total	39.9	0.25	3	8.75	2	0	0.00	1.714

Due to constant vehicles, use the out of the total road length of 13.06 km, about 0.25 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\ &= \frac{12}{7} \text{ hours} = \mathbf{1.71} \end{aligned}$$

Thus,

$$\begin{aligned} \text{PCC} &= 39.9 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\ &= \mathbf{478.8 \text{ visits/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$\text{RCC} = \text{PCC} - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$\text{RCC} = \text{PCC} \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

i. Road erosion

Total Road Length (M_t) = 39.9 km

Medium erosion risk = 8.75 km (weightage factor 2)

High erosion risk = 0.25 km (weightage factor 3)

$$\begin{aligned} M_1 &= 8.75 \times 2 + 0.25 \times 3 \\ &= \mathbf{18.25 \text{ km}} \end{aligned}$$

Thus,

$$Cf_e = \frac{18.25}{39.9} \times 100 = 45.73\%$$

ii. **Disturbance to Wildlife**

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor } (Cf_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total } Cf_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

iii. **Temporary closure of Roads**

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100}$$

$$= 478.8 \times 0.542 \times 0.99 \times 0.8$$

$$= 205.7 \text{ or } \mathbf{206 \text{ visits/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned} \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\ &= 205.76 \times 0.45 \\ &= \mathbf{92.59 \text{ or } 93 \text{ visits/day}} \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $92.59 \times 5 = 121.033 = \mathbf{463 \text{ tourists / day}}$

Tourist in a year = $121 \times 365 = \mathbf{168982 \text{ tourists / year.}}$

Total Carrying Capacity for Alimod Baruth Cluster = 463 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Bandhan Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- vii. Only vehicular movements on roads are permitted
- viii. The “standing area” is not relevant, but “closeness” between vehicles is important
- ix. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.

- x. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xi. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- xii. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:
Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	Circuit to Bandhan	5.74	0	0	1	0	0	0.000	1.714
2	Bandhan to Dahelia	7.4	0	0	0	0	5.5	0.000	1.714
	Total	13.18	0	3	2	2	5.5	0.00	1.714

Due to constant vehicles, use the out of the total road length of 13.06 km, about 0.25 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned}
 \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\
 &= \frac{12}{7} \text{ hours} = \mathbf{1.71}
 \end{aligned}$$

Thus,

$$\begin{aligned}
 PCC &= 13.8 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\
 &= \mathbf{158.2 \text{ visits/day}}
 \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, C_f is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - C_{f_1}}{100} \times \frac{100 - C_{f_2}}{100} \dots \times \frac{100 - C_{f_n}}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

iv. Road erosion

Total Road Length (M_t) = 13.18 km

Medium erosion risk = 2 km (weightage factor 2)

High erosion risk = 0 km (weightage factor 3)

$$\begin{aligned} M_1 &= 2 \times 2 + 0 \times 3 \\ &= 4 \text{ km} \end{aligned}$$

Thus,

$$C_{f_e} = \frac{4.0}{13.18} \times 100 = 30.34 \%$$

v. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor (Cf}_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total Cf}_w = C_{f_{w1}} + C_{f_{w2}} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

vi. **Temporary closure of Roads**

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned}
 RCC &= PCC \times \frac{100 - C_{fe}}{100} \times \frac{100 - C_{fw}}{100} \times \frac{100 - C_{ft}}{100} \\
 RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \\
 &= 158.16 \times 0.696 \times 0.99 \times 0.8 \\
 &= 87.24 \text{ or } \mathbf{87 \text{ visits/day}}
 \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned}
 \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\
 &= 87.24 \times 0.45 \\
 &= \mathbf{39.26 \text{ or } 40 \text{ visits/day}}
 \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $39.26 \times 5 = 121.033 = 196$ tourists / day

Tourist in a year = $196 \times 365 = 71651$ tourists / year.

Total Carrying Capacity for Bandhan Cluster = 196 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Bargondi Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- xiii. Only vehicular movements on roads are permitted
- xiv. The “standing area” is not relevant, but “closeness” between vehicles is important
- xv. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- xvi. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xvii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- xviii. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel (hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	SH to Bori	4.4	0	0	0	0	4.4	0.073	1.714
2	Bori to Raitwari	2.07	0	0	0	0	2.07	0.035	1.714
3	Raitwari to Amadeh	1.97	0	0	0	0	1.97	0.033	1.714
4	Amadeh to bargondi	4.62	1.8	0	1	0	1.27	0.000	1.714
	Total	13.06	1.8	3	1	2	9.71	0.14	1.714

Due to constant vehicles, use the out of the total road length of 13.06 km, about 1.8 km is prone to high erosion.

Sr No.	Proposed Activity	Time (hrs)
1	Adventure Activity	10
2	Camping	4
	Total Time	14
	Average Time	7

The average time is spent in area is at adventure zones and Museums. The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned}
 \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\
 &= \frac{12}{7} \text{ hours} = \mathbf{1.71}
 \end{aligned}$$

Thus,

$$\begin{aligned}
 PCC &= 13.06 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\
 &= \mathbf{156.72 \text{ visits/day}}
 \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$\text{RCC} = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, *Cf* is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

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$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$Corrective\ Factor\ (Cf) = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

vii. Road erosion

Total Road Length (M_t) = 56.55 km

Medium erosion risk = 15.28 km (weightage factor 2)

High erosion risk = 1.53 km (weightage factor 3)

$$\begin{aligned} M_1 &= 1 \times 2 + 1.8 \times 3 \\ &= 7.4\ km \end{aligned}$$

Thus,

$$Cf_e = \frac{35.15}{56.55} \times 100 = 56.66\%$$

viii. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$Corrective\ Factor\ (Cf_w) = \frac{Limiting\ months/year}{No.\ of\ open\ months/year} \times 100$$

$$Total\ Cf_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

ix. **Temporary closure of Roads**

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned}
 RCC &= PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100} \\
 RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \\
 &= 156.72 \times 0.43 \times 0.99 \times 0.8 \\
 &= 53.79 \text{ or } \mathbf{54 \text{ visits/day}}
 \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned}
 \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\
 &= 53.79 \times 0.45 \\
 &= \mathbf{24.207 \text{ or } 25 \text{ visits/day}}
 \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = 24.07*5 = 121.033 = **121 tourists / day**

Tourist in a year = 121*365 = **44177 tourists / year.**

Carrying Capacity for Bargondi Cluster = 121 tourists / day

Carrying Capacity for Bargondi Safari = 54 tourists / day

Carrying Capacity for Night Safari = 120 tourists / day

Total Carrying Capacity for Bargondi Cluster = 295 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

of Bhurabhagat Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- xix. Only vehicular movements on roads are permitted
- xx. The “standing area” is not relevant, but “closeness” between vehicles is important
- xxi. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- xxii. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xxiii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- xxiv. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)					Time Travel(hr)	RF
			High	Weightage	Medium	Weightage	Low		
1	Circuit to Bhuraghat	6.7	0	0	0	0	6.7	0.000	1.714

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
2	Bijori to Bhurabhagat	3.23	0	0	1.5	0	1.7	0.000	1.714
3	Bhurabhagat to Sangakheda	2.19	0	0	0	0	2.19	0.000	1.714
4	Bhurabhagat to Nandia	4.29	0.198	0	0.99	0	3.1	0.000	1.714
5	Nandia to Gutkheda	1.55	0	0	0	0	1.55	0.000	1.714
6	Bhurabhagat to Kundaikhana	1.4	0	0	0	0	1.4	0.000	1.714
	Total	19.36	0.198	3	2.49	2	16.64	0.00	1.714

Due to constant vehicles, use the out of the total road length of 19.36 km, about 0.19 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned}
 \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\
 &= \frac{12}{7} \text{ hours} = \mathbf{1.71}
 \end{aligned}$$

Thus,

$$\begin{aligned}
 PCC &= 19.36 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\
 &= \mathbf{232.32 \text{ visits/day}}
 \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

x. Road erosion

Total Road Length (M_t) = 19.16 km

Medium erosion risk = 2.49 km (weightage factor 2)

High erosion risk = 0.198 km (weightage factor 3)

$$\begin{aligned} M_1 &= 2.49 \times 2 + 0.198 \times 3 \\ &= 5.57 \text{ km} \end{aligned}$$

Thus,

$$Cf_e = \frac{5.57}{19.38} \times 100 = 30.34 \%$$

xi. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor (Cf}_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total Cf}_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xii. Temporary closure of Roads

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned}
 RCC &= PCC \times \frac{100 - C_{fe}}{100} \times \frac{100 - C_{fw}}{100} \times \frac{100 - C_{ft}}{100} \\
 RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \\
 &= 232.32 \times 0.71 \times 0.99 \times 0.8 \\
 &= 131.02 \text{ or } \mathbf{131 \text{ visits/day}}
 \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned}
 \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\
 &= 131.02 \times 0.45 \\
 &= \mathbf{58.96 \text{ or } 59 \text{ visits/day}}
 \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $58.96 \times 5 = \mathbf{295 \text{ tourists / day}}$

Tourist in a year = $196 \times 365 = \mathbf{107602 \text{ tourists / year.}}$

Total Carrying Capacity for Bhurabhagat Cluster = 295 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Churni Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- xxv. Only vehicular movements on roads are permitted
- xxvi. The “standing area” is not relevant, but “closeness” between vehicles is important
- xxvii. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- xxviii. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xxix. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- xxx. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)					Time Travel(hr)	RF
			High	Weightage	Medium	Weightage	Low		
1	Gutkheda to supdongar	2.1	0	0	0	0	0	0.000	1.714
2	Supdongar to Sakri	2.69	0	0	0	0	5.5	0.000	1.714
3	Sakri to Churni	5.34	0	0	0	0	0	0.000	1.714
4	Circuit to Nishan	3.16	0	0	1	0	3.5	0.000	1.714
5	Nishan to campsite	2.77	0.51	0	1.5	0	0	0.000	1.714

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
	Total	16.06	0.51	3	2.5	2	9	0.00	1.714

Due to constant vehicles, use the out of the total road length of 13.06 km, about 0.25 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\ &= \frac{12}{7} \text{ hours} = \mathbf{1.71} \end{aligned}$$

Thus,

$$\begin{aligned} \text{PCC} &= 16.06 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\ &= \mathbf{192.7 \text{ visits/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$\text{RCC} = \text{PCC} - Cf_1 - Cf_2 \dots Cf_n$$

Where, *Cf* is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$\text{RCC} = \text{PCC} \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xiii. Road erosion

Total Road Length (M_t) = 39.9 km

Medium erosion risk = 8.75 km (weightage factor 2)

High erosion risk = 0.25 km (weightage factor 3)

$$\begin{aligned} M_1 &= 2.5 \times 2 + 0.51 \times 3 \\ &= 6.53 \text{ km} \end{aligned}$$

Thus,

$$Cf_e = \frac{18.25}{39.9} \times 100 = 40.66\%$$

xiv. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor } (Cf_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total } Cf_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xv. Temporary closure of Roads

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned} RCC &= PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100} \\ RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \end{aligned}$$

$$= 192.72 \times 0.593 \times 0.99 \times 0.8$$

$$= 90.57 \text{ or } \mathbf{91 \text{ visits/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\text{Effective Permissible Carrying Capacity} = RCC \times MC$$

$$= 90.57 \times 0.45$$

$$= \mathbf{40.75 \text{ or } 41 \text{ visits/day}}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $40.75 \times 5 = \mathbf{204 \text{ tourists / day}}$

Tourist in a year = $204 \times 365 = \mathbf{74383 \text{ tourists / year.}}$

Total Carrying Capacity for Churni Cluster = 204 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Dhasai Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

PART:3 - ANNEXURE

- xxxi. Only vehicular movements on roads are permitted
- xxxii. The “standing area” is not relevant, but “closeness” between vehicles is important
- xxxiii. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- xxxiv. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xxxv. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- xxxvi. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	Roadto Kelipunji		0	0	0	0	23.22	0.000	1.714
2	Kelipunji to Kapladhar	2.9	0	0	0	0	5.5	0.000	1.714
3	Kelipunji to Dhasai	6.13	0	0	0	0	6.13	0.000	1.714
4	Dhasai to Bardha	3.74	0	0	1	0	3.5	0.000	1.714
5	Dhasai to Churna Gate	2.04	0	0	1.73	0	2.04	0.000	1.714
	Total	14.81	0	3	2.73	2	40.39	0.00	1.714

Due to constant vehicles, use the out of the total road length of 19.36 km, about 0 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$Rotation\ Factor\ (Rf) = \frac{No.\ of\ open\ months}{Average\ Time\ of\ one\ visit}$$

$$= \frac{12}{7} \text{ hours} = 1.71$$

Thus,

$$PCC = 14.81 \text{ km} \times 7 \text{ vehicles/km} \times 1.71$$

$$= 177.72 \text{ visits/day}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xvi. Road erosion

Total Road Length (M_t) = 14.81 km

Medium erosion risk = 2.73 km (weightage factor 2)

High erosion risk = 0 km (weightage factor 3)

$$\begin{aligned} M_1 &= 2.73 \times 2 + 0 \times 3 \\ &= 5.46 \text{ km} \end{aligned}$$

Thus,

$$Cf_e = \frac{5.46}{14.81} \times 100 = 30.34 \%$$

xvii. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor } (Cf_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total } Cf_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xviii. **Temporary closure of Roads**

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100}$$

$$= 177.72 \times 0.63 \times 0.99 \times 0.8$$

$$= 88.86 \text{ or } \mathbf{87 \text{ visits/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned} \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\ &= 88.86 \times 0.45 \\ &= \mathbf{39.98 \text{ or } 40 \text{ visits/day}} \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $39.98 \times 5 = \mathbf{200 \text{ tourists / day}}$

Tourist in a year = $196 \times 365 = \mathbf{72978 \text{ tourists / year.}}$

Total Carrying Capacity for Dhasai Cluster = 200 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Dokrikheda Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- xxxvii. Only vehicular movements on roads are permitted
- xxxviii. The “standing area” is not relevant, but “closeness” between vehicles is important
- xxxix. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- xl. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xli. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day

- xlii. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:
Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	SH to Dokrikheda	2.18	0	0	0	0	2.18	0.000	1.714
2	Dokrikheda to Aanhoni	4.38	0	0	0	0	5.5	0.000	1.714
3	Aanhoni to Temple	0.99	0	0	0.99	0	0	0.000	1.714
4	Aanhoni to Muharikhurd	1.9	0	0	1	0	3.5	0.000	1.714
5	Aanhoni to Choka	2.77	0	0	0	0	0	0.000	1.714
6	Dokrikheda	0.53	0	0	0	0	0	0.000	1.714
7	Dokrikheda to Jhiria	2.42	0	0	0	0	2.42	0.000	1.714
	Total	15.17	0	3	1.99	2	11.18	0.00	1.714

Due to constant vehicles, use the out of the total road length of 19.36 km, about 0 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\ &= \frac{12}{7} \text{ hours} = \mathbf{1.71} \end{aligned}$$

Thus,

$$\begin{aligned} \text{PCC} &= 15.17 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\ &= \mathbf{182.04 \text{ visits/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xix. Road erosion

Total Road Length (M_t) = 15.17 km

Medium erosion risk = 1.99 km (weightage factor 2)

High erosion risk = 0 km (weightage factor 3)

$$\begin{aligned} M_1 &= 1.99 \times 2 + 0 \times 3 \\ &= 3.98 \text{ km} \end{aligned}$$

Thus,

$$Cf_e = \frac{3.98}{15.17} \times 100 = 26.23 \%$$

xx. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor (Cf}_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total Cf}_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xxi. **Temporary closure of Roads**

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned}
 RCC &= PCC \times \frac{100 - C_{fe}}{100} \times \frac{100 - C_{fw}}{100} \times \frac{100 - C_{ft}}{100} \\
 RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \\
 &= 182.04 \times 0.73 \times 0.99 \times 0.8 \\
 &= 106.35 \text{ or } \mathbf{106 \text{ visits/day}}
 \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned}
 \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\
 &= 106.35 \times 0.45 \\
 &= \mathbf{47.85 \text{ or } 48 \text{ visits/day}}
 \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = 47.85*5 = **239 tourists / day**

Tourist in a year = 239*365 = **87340 tourists / year.**

Total Carrying Capacity for Dokrikheda Cluster = 239 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Khamda Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- xl.iii. Only vehicular movements on roads are permitted
- xl.iii. The “standing area” is not relevant, but “closeness” between vehicles is important
- xl.iii. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- xl.iii. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- xl.iii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- xl.iii. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF
			High	Weigh-tage	Medium	Weightage		

1	Route 1	30	1	3	3	2	13	1	4	2.25
	Total	30	1	3	3	2	13	1	4	2.25

Due to constant vehicles, use the out of the total road length of 30 km, about 1 km is prone to high erosion.

The average time spent at tourism location in a day is 4 hrs.

$$\text{Rotation Factor (Rf)} = \frac{\text{No. of open months}}{\text{Average Time of one visit}}$$

$$= \frac{9}{4} \text{ hours} = 2.25$$

Thus,

$$PCC = 30.0 \text{ km} \times 2 \text{ vehicles/km} \times 2.25$$

$$= 135.00 \text{ visits/day}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xxii. Road erosion

Total Road Length (M_t) = 30.0 km

Medium erosion risk = 3 km (weightage factor 2)

High erosion risk = 1 km (weightage factor 3)

$$M_1 = 3 \times 2 + 1 \times 3$$

$$= 9.00 \text{ km}$$

Thus,

$$Cf_e = \frac{21.63}{29.8} \times 100 = 30.00\%$$

xxiii. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor } (Cf_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total } Cf_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xxiv. Temporary closure of Roads

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100}$$

$$= 135.00 \times 0.70 \times 0.99 \times 0.8$$

$$= 74.84 \text{ or } 75 \text{ visits/day}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\text{Effective Permissible Carrying Capacity} = RCC \times MC$$

$$= 74.84 \times 0.45$$

$$= 33.68 \text{ or } 34 \text{ visits/day}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $34.94 \times 6 = 202 \text{ tourists / day}$

Tourist in a year = $202 \times 365 = 73758 \text{ tourists / year.}$

Total Carrying Capacity for Khamda Cluster = 202 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Pisua Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

xlix. Only vehicular movements on roads are permitted

l. The “standing area” is not relevant, but “closeness” between vehicles is important

- li. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- lii. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- liii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- liv. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:
Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	Matkuli to Mehndikheda	2.16	0	0	0	0	2.16	0.000	1.714
2	Matkuli to Bindakheda	3.5	0	0	0	0	5.5	0.000	1.714
3	Matkuli to Bindakheda	2.4	0	0	0	0	2.4	0.000	1.714
4	Bindakheda to Pisua	2.7	0	0	1	0	3.5	0.000	1.714
	Total	12.8	0	3	1	2	15.6	0.00	1.714

Due to constant vehicles, use the out of the total road length of 12.8 km, about 0 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned}
 \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\
 &= \frac{12}{7} \text{ hours} = \mathbf{1.71}
 \end{aligned}$$

Thus,

$$\begin{aligned}
 PCC &= 12.8 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\
 &= \mathbf{153.6 \text{ visits/day}}
 \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xxv. Road erosion

Total Road Length (M_t) = 12.8 km

Medium erosion risk = 1 km (weightage factor 2)

High erosion risk = 0 km (weightage factor 3)

$$\begin{aligned} M_1 &= 1 \times 2 + 0 \times 3 \\ &= 2 \text{ km} \end{aligned}$$

Thus,

$$Cf_e = \frac{2}{12.8} \times 100 = 15.62 \%$$

xxvi. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor (Cf}_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total Cf}_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xxvii. **Temporary closure of Roads**

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned}
 RCC &= PCC \times \frac{100 - C_{fe}}{100} \times \frac{100 - C_{fw}}{100} \times \frac{100 - C_{ft}}{100} \\
 RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \\
 &= 153.6 \times 0.84 \times 0.99 \times 0.8 \\
 &= 102.64 \text{ or } \mathbf{103 \text{ visits/day}}
 \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\text{Effective Permissible Carrying Capacity} = RCC \times MC$$

$$= 102.64 \times 0.45$$

$$= 46.18 \text{ or } 46 \text{ visits/day}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = $46.18 \times 5 = 231 \text{ tourists / day}$

Tourist in a year = $231 \times 365 = 84296 \text{ tourists / year.}$

Total Carrying Capacity for Pisua Cluster = 231 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Tawanagar Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- lv. Only vehicular movements on roads are permitted
- lvi. The “standing area” is not relevant, but “closeness” between vehicles is important
- lvii. The design speed for vehicles are take as 60 kmph as per S.O. 1522 (E) dated 6th April, 2018 (M2 & M3 in other road category) declared by Ministry of Road Transport & Highways.
- lviii. There is a required distance of at least 150 m between 2 vehicles to avoid accidents with animals as well as vehicles as reference taken from stopping distance research studies . (7 vehicles/ km.)
- lix. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lx. Linear road lengths within the tourist zone are more relevant than area, and the total lengths are

The total Road length open for Vehicles in different tourism areas of STR is given below:

Description and length of tourism roads

Road Details									
Sr No	Vehicular Roads	Length (km)	Eroded Road (km)				Time Travel(hr)	RF	
			High	Weightage	Medium	Weightage			Low
1	SH to Tawanagar	22.61	0	0	0	0	22.61	0.000	1.714
2	Tawanagar to Stepwell	3.9	0	0	0.5	0	5.5	0.000	1.714
3	Tawanagar to Cahurasibaba	4.7	0.45	0	0	0	4.068	0.000	1.714
	Total	31.21	0.45	3	0.5	2	32.178	0.00	1.714

Due to constant vehicles, use the out of the total road length of 13.06 km, about 0.25 km is prone to high erosion.

The average time spent at tourism location in a day is 7 hrs.

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{No. of open months}}{\text{Average Time of one visit}} \\ &= \frac{12}{7} \text{ hours} = 1.71 \end{aligned}$$

Thus,

$$\begin{aligned} PCC &= 31.21 \text{ km} \times 7 \text{ vehicles/km} \times 1.71 \\ &= 374.5 \text{ visits/day} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xxviii. Road erosion

Total Road Length (M_t) = 39.9 km

Medium erosion risk = 8.75 km (weightage factor 2)

High erosion risk = 0.25 km (weightage factor 3)

$$M_1 = 8.75 \times 2 + 0.25 \times 3$$

$$= 18.25 \text{ km}$$

Thus,

$$Cf_e = \frac{18.25}{39.9} \times 100 = 45.73\%$$

xxix. Disturbance to Wildlife

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur.

$$\text{Corrective Factor } (Cf_w) = \frac{\text{Limiting months/year}}{\text{No. of open months/year}} \times 100$$

$$\text{Total } Cf_w = Cf_{w1} + Cf_{w2} = 1\%$$

Assumptions:

Since, the area lies in buffer zone, the wildlife disturbance will be minimum.

As the wildlife, occupies the core portion while undergoing the various metabolic process and that is kept closed in Mid-June to commencement of October. However, as per the expert consultation, it was pointed that the possibility of occurrence of event is 1 in 100 events therefore, one percent is taken.

xxx. Temporary closure of Roads

For maintenance or other managerial reasons, visitation to certain roads may be temporary restricted within the park. As per the expert consultation, it was pointed that the possibility of occurrence to be kept 20%.

Therefore, the Real carrying capacity is as under:

$$\begin{aligned}
 RCC &= PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100} \\
 RCC &= PCC \times \frac{100 - 62.15}{100} \times \frac{100 - 1}{100} \times \frac{100 - 20}{100} \\
 &= 374.5 \times 0.542 \times 0.99 \times 0.8 \\
 &= 274.28 \text{ or } \mathbf{274 \text{ visits/day}}
 \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned}
 \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\
 &= 274.48 \times 0.45 \\
 &= \mathbf{123.42 \text{ or } 123 \text{ visits/day}}
 \end{aligned}$$

Total Number of Tourists in one Passenger Carrying Unit (PCU) is 5.

Total Number of Passenger = 123.42*5 = 121.033 = **618 tourists / day**

Tourist in a year = 618*365 = **225257 tourists / year.**

Total Carrying Capacity for Tawanagar Cluster = 618 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Annexure 13.5 : Carrying capacity based on Polygon Area Method of MOEFCC guidelines

Alimod-Baruth Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- ix. Every visitor needs 1 sq.m. of the space at any given time.
- lxii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lxiii. The activities in Alimod-baruth Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of alimod-baruth cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Recreational	47609.8	7
2	Camping - Kurai	573718	8
3	Campsite Baruth	80549.58	8
4	Adventure zone	56978	7
	Total	758855.38	30
	Average hours		7.5

The average time spent in a day in all activities are 7.3 hours in a day out of 12 hours of opening duration.

If we consider that every visitor needs 2 m² of the space at any given time. Then, v/a =0.16.

So, Rotational factor for cluster is,

$$Rotation\ Factor\ (Rf) = \frac{Opening\ Duration}{Average\ Time\ of\ one\ visit}$$

$$= \frac{12}{7.3} \text{ hours} = 1.64$$

Thus,

$$PCC = 758855.38 \text{ sqmt} \times 0.16 \times 0.5$$

$$= 207905.58 \text{ tourists/day}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xxxi. Rainfall

If we consider rainy days in STR = 135 days,

Then, M_1 = 135 days & M_t = 365 days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

xxxii. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

xxxiii. **Wildlife Disturbance in area**

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$\begin{aligned} RCC &= PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100} \\ RCC &= PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100} \\ &= 207905.58 \times 0.67 \times 0.95 \times 0.95 \\ &= 128318.63 \text{ or } \mathbf{128319 \text{ tourists/day}} \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned} \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\ &= 128318.6 \times 0.45 \\ &= \mathbf{64159.31 \text{ or } 64160 \text{ tourists/day}} \end{aligned}$$

Total Carrying Capacity for Alimod-Baruth Cluster = 64160 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Bandhan Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- lxiv. Every visitor needs 1 sq.m. of the space at any given time.
- lxv. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lxvi. The activities in Bandhan Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Bandhan cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Camping	257234.41	24
2	Camping	393114.45	24
	Total	650348.86	48
	Average hours		24

The average time spent in a day in all activities are 24 hours in a day out of 24 hours of opening duration.

If we consider that every visitor needs 1 m² of the space at any given time. Then, v/a = 1/ 12 = 0.08.

So, Rotational factor for cluster is,

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{Opening Duration}}{\text{Average Time of one visit}} \\ &= \frac{12}{24} \text{ hours} = \mathbf{0.5} \end{aligned}$$

Thus,

$$\begin{aligned} \text{PCC} &= 650348.86 \text{ sqmt} \times 0.08 \times 0.5 \\ &= \mathbf{27097.86 \text{ tourists/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$\text{RCC} = \text{PCC} - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$\text{RCC} = \text{PCC} \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xxxiv. Rainfall

If we consider rainy days in STR = 135 days,

Then, M_1 = 135 days & M_t = 365 days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

xxxv. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

xxxvi. **Wildlife Disturbance in area**

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$\begin{aligned} RCC &= PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100} \\ RCC &= PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100} \\ &= 20797.86 \times 0.67 \times 0.95 \times 0.95 \\ &= 16274.71 \text{ or } \mathbf{16,275 \text{ tourists/day}} \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\text{Effective Permissible Carrying Capacity} = RCC \times MC$$

$$= 16247.71 \times 0.45$$

$$= \mathbf{8362.35 \text{ or } 8362 \text{ tourists/day}}$$

Total Carrying Capacity for Bandhan Cluster = 8362 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Bargondi Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- lxvii. Every visitor needs 1 sq.m. of the space at any given time.
- lxviii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lxix. The activities in Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Bargondi cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Adventure Zone	160016	8
2	Interpretation Center	3140	8
3	Camping	92335	10
	Total	255491	26
	Avergar hours		8.666666667

The average time spent in a day in all activities are 24 hours in a day out of 24 hours of opening duration.

If we consider that every visitor needs 1 m² of the space at any given time. Then, v/a =0.08.

So, Rotational factor for cluster is,

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{Opening Duration}}{\text{Average Time of one visit}} \\ &= \frac{12}{9} \text{ hours} = \mathbf{1.33} \end{aligned}$$

Thus,

$$\begin{aligned} PCC &= 2484309.22 \text{ sqmt} \times 0.08 \times 0.5 \\ &= \mathbf{340654.66 \text{ tourists/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xxxvii. Rainfall

If we consider rainy days in STR = 135 days,

Then, $M_1 = 135$ days & $M_t = 365$ days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

xxxviii. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

xxxix. Wildlife Disturbance in area

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100}$$

$$= 340654.66 \times 0.67 \times 0.95 \times 0.95$$

$$= 150822.3 \text{ or } \mathbf{150822 \text{ tourists/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\text{Effective Permissible Carrying Capacity} = RCC \times MC$$

$$= 150822.3 \times 0.45$$

$$= \mathbf{65893.8 \text{ or } 65894 \text{ tourists/day}}$$

Total Carrying Capacity for Khamda Cluster = 65894 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Bhurabhagat Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- lxx. Every visitor needs 1 sq.m. of the space at any given time.
- lxxi. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lxxii. The activities in BhuraBhagat Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Bhura Bhagat cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Camping	234540.41	24
2	Camping	859006.83	24
3	Temple	700	12
	Total	1094247.24	60
	Avergar hours		20

The average time spent in a day in all activities are 20 hours in a day out of 24 hours of opening duration.

If we consider that every visitor needs 1 m² of the space at any given time. Then, v/a =2/12=0.166.

PART:3 - ANNEXURE

So, Rotational factor for cluster is,

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{Opening Duration}}{\text{Average Time of one visit}} \\ &= \frac{12}{20} \text{ hours} = \mathbf{0.6} \end{aligned}$$

Thus,

$$\begin{aligned} PCC &= 1094247.24 \text{ sqmt} \times 0.16 \times 0.6 \\ &= \mathbf{109424.72 \text{ tourists/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xi. Rainfall

If we consider rainy days in STR = 135 days,

Then, M_1 = 135 days & M_t = 365 days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

xli. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor (Cf}_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

xlii. **Wildlife Disturbance in area**

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$\begin{aligned} RCC &= PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100} \\ RCC &= PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100} \\ &= 109424.72 \times 0.67 \times 0.95 \times 0.95 \\ &= 67536.57 \text{ or } \mathbf{67537 \text{ tourists/day}} \end{aligned}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned} \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\ &= 67536.57 \times 0.45 \\ &= \mathbf{33768.28 \text{ or } 33768 \text{ tourists/day}} \end{aligned}$$

Total Carrying Capacity for Bhurabhagat Cluster = 33768 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists. “

Churni Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- lxxiii. Every visitor needs 1 sq.m. of the space at any given time.
- lxxiv. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lxxv. The activities in Churni Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Churni cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Camping	47232.48	24
2	Cultural Theme Park	198555	9
	Total	245787.48	33
	Avergar hours		16.5

The average time spent in a day in all activities are 16.5 hours in a day out of 24 hours of opening duration.

If we consider that every visitor needs 1 m² of the space at any given time. Then, v/a =1.

So, Rotational factor for cluster is,

$$\text{Rotation Factor (Rf)} = \frac{\text{Opening Duration}}{\text{Average Time of one visit}}$$

$$= \frac{12}{16.5} \text{ hours} = 0.727$$

Thus,

$$\begin{aligned} PCC &= 245787.48 \text{ sqmt} \times 1 \times 0.727 \\ &= 178754.53 \text{ tourists/day} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

xliii. **Rainfall**

If we consider rainy days in STR = 135 days,

Then, M_1 = 135 days & M_t = 365 days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

xliv. **Natural Disturbance**

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

xlv. **Wildlife Disturbance in area**

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100}$$

$$= 178754.53 \times 0.67 \times 0.95 \times 0.95$$

$$= 110326.70 \text{ or } \mathbf{110327 \text{ tourists/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\text{Effective Permissible Carrying Capacity} = RCC \times MC$$

$$= 110326.70 \times 0.45$$

$$= \mathbf{55163.35 \text{ or } 55163 \text{ tourists/day}}$$

Total Carrying Capacity for Churni Cluster = 55163 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists. “

Dokrikheda Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

lxxvi. Every visitor needs 1 sq.m. of the space at any given time.

lxxvii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day

lxxviii. The activities in Dokrikheda Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Dokrikheda cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Mela & Open Ground	15769	6
2	Food Street	2698	5
3	Water adventure lounge	1510	6
4	Museum	34772	9
5	Parks	12034	9
6	Flower Park	13373	9
7	Sericulture	23355	9
8	Camp site - Dokrikheda	10581	24
9	Camp site - Choka	17254	9
10	Cultural Park	13940	9
	Total	145286	95
	Average hours		9.5

The average time spent in a day in all activities are 9.5 hours in a day out of 9 hours of opening duration.

If we consider that every visitor needs 1 m² of the space at any given time. Then, v/a =1.

So, Rotational factor for cluster is,

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{Opening Duration}}{\text{Average Time of one visit}} \\ &= \frac{12}{9.5} \text{ hours} = \mathbf{1.26} \end{aligned}$$

Thus,

$$\begin{aligned} PCC &= 231626 \text{ sqmt} \times 1 \times 1.54 \\ &= \mathbf{183519.15 \text{ tourists/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_1 = limiting magnitude of the variable

M_t = total magnitude of the variable

***xlvi.* Rainfall**

If we consider rainy days in STR = 135 days,

Then, $M_1 = 135$ days & $M_t = 365$ days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

xlvi. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

xlvi. Wildlife Disturbance in area

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100}$$

$$= 183519.15 \times 0.67 \times 0.95 \times 0.95$$

$$= 113267.41 \text{ or } \mathbf{113267 \text{ tourists/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned} \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\ &= 113267.41 \times 0.45 \\ &= \mathbf{56633.70 \text{ or } 56634 \text{ tourists/day}} \end{aligned}$$

Total Carrying Capacity for Dokrikheda Cluster = 56634 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Khamda Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

lxxix. Every visitor needs 1 sq.m. of the space at any given time.

lxxx. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day

lxxxi. The activities in Khamda Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Khamda cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Camping	198514.4	24
2	Camping	2285794.82	24
	Total	2484309.22	48
	Average hours		24

The average time spent in a day in all activities are 24 hours in a day out of 12 hours of opening duration.

If we consider that every visitor needs 1 m² of the space at any given time. Then, v/a =0.08.

So, Rotational factor for cluster is,

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{Opening Duration}}{\text{Average Time of one visit}} \\ &= \frac{12}{24} \text{ hours} = \mathbf{0.5} \end{aligned}$$

Thus,

$$\begin{aligned} PCC &= 2484309.22 \text{ sqmt} \times 0.08 \times 0.5 \\ &= \mathbf{103512.88 \text{ tourists/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$RCC = PCC - Cf_1 - Cf_2 \dots Cf_n$$

Where, *Cf* is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$RCC = PCC \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

*M*₁ = limiting magnitude of the variable

M_t = total magnitude of the variable

xlix. Rainfall

If we consider rainy days in STR = 135 days,

Then, M_1 = 135 days & M_t = 365 days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

i. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

ii. Wildlife Disturbance in area

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100}$$

$$= 103512.88 \times 0.67 \times 0.95 \times 0.95$$

$$= 63887.80 \text{ or } \mathbf{63888 \text{ tourists/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\begin{aligned} \text{Effective Permissible Carrying Capacity} &= RCC \times MC \\ &= 63887.80 \times 0.45 \\ &= \mathbf{31943.90 \text{ or } 31944 \text{ tourists/day}} \end{aligned}$$

Total Carrying Capacity for Dokrikheda Cluster = 31944 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Tawanagar Cluster

Physical Carrying Capacity (PCC)

This is the “maximum number of visitors that can physically fit into a defined space, over a particular time”. It is expressed as:

$$PCC = A \times V/a \times Rf$$

Where, **A** = available area for public use

V/a = one visitor / m²

Rf = rotation factor (number of visits per day)

In order to measure the PCC relating to Buffer, the following criteria must be taken into account:

- lxxxii. Every visitor needs 1 sq.m. of the space at any given time.
- lxxxiii. The Buffer is proposed to be open for 12 months and the 24 hrs per day (i.e., there is no restriction in buffer zone). The PA is open to tourists for 8 months in a year and 9 hours per day
- lxxxiv. The activities in Tawanagar Buffer area opens for 12 hours in daytime. As the wildlife movement in area is observed, the time fixed as per the daytime duration.

The total area of proposed tourism activities of Tawanagar cluster is given below:

Description and length of tourism roads

Sr No	Proposed activity	Proposed Area	Open Periods (hrs)
1	Flower park & Garden	13085	7
2	Camping	5308	8
4	Adventure zone	247746	7
	Total	266139	22
	Average hours		7.33

The average time spent in a day in all activities are 7.3 hours in a day out of 12 hours of opening duration.

If we consider that every visitor needs 2 m² of the space at any given time. Then, v/a =0.16.

So, Rotational factor for cluster is,

$$\begin{aligned} \text{Rotation Factor (Rf)} &= \frac{\text{Opening Duration}}{\text{Average Time of one visit}} \\ &= \frac{12}{7.3} \text{ hours} = \mathbf{1.64} \end{aligned}$$

Thus,

$$\begin{aligned} \text{PCC} &= 266139 \text{ sqmt} \times 0.16 \times 0.5 \\ &= \mathbf{72914.79 \text{ tourists/day}} \end{aligned}$$

Real Carrying Capacity (RCC)

RCC is the maximum permissible number of visits to a site, once the “reductive factors” (corrective) derived from the particular characteristics of the site have been applied to the PCC. These “reductive factors” (corrective) are based on biophysical, environmental, ecological, social and management variables.

$$\text{RCC} = \text{PCC} - Cf_1 - Cf_2 \dots Cf_n$$

Where, Cf is a corrective factor expressed as a percentage. Thus, the formula for calculating RCC is:

$$\text{RCC} = \text{PCC} \times \frac{100 - Cf_1}{100} \times \frac{100 - Cf_2}{100} \dots \times \frac{100 - Cf_n}{100}$$

Corrective Factors are “site-specific”, and are expressed in percentage as below:

$$\text{Corrective Factor (Cf)} = \frac{M_1}{M_t} \times 100$$

Where,

M_l = limiting magnitude of the variable

M_t = total magnitude of the variable

ii. Rainfall

If we consider rainy days in STR = 135 days,

Then, M_l = 135 days & M_t = 365 days

Thus,

$$Cf_r = \frac{135}{365} \times 100 = 36.98\%$$

iii. Natural Disturbance

Natural disturbance in terms of atmospheric crisis, human interference, disasters, closure of roads or any event disturbing the tourism activity is considered as 30 days.

$$\text{Corrective Factor } (Cf_n) = \frac{30}{365} \times 100$$

$$Cf_n = 8.21 \%$$

iv. Wildlife Disturbance in area

Species which are prone to disturbance owing to visitation are considered i.e Chital or Spotted Deer and Indian Gaur. The disturbance by wildlife is assumed for 30 days in a year.

Therefore,

$$\text{Corrective Factor } (Cf_w) = \frac{30}{365} \times 100$$

$$Cf_w = 8.21 \%$$

Therefore, the Real carrying capacity is as under:

$$RCC = PCC \times \frac{100 - Cf_e}{100} \times \frac{100 - Cf_w}{100} \times \frac{100 - Cf_t}{100}$$

$$RCC = PCC \times \frac{100 - 36.98}{100} \times \frac{100 - 8.21}{100} \times \frac{100 - 8.21}{100}$$

$$= 72914.79 \times 0.67 \times 0.95 \times 0.95$$

$$= 45002.76 \text{ or } \mathbf{63888 \text{ tourists/day}}$$

Effective Permissible Carrying Capacity (EPCC)

ECC is the maximum number of visitors that a site can sustain, given the management capacity (MC) available. ECC is obtained by multiplying the real carrying capacity (RCC) with the management capacity (MC). MC is defined as the sum of conditions that protected area administration requires if it is to carry out its functions at the optimum level. Limitations in management like lack of staff and infrastructure limit the RCC.

Managerial Capacity (MC) for STR = 45%

Therefore,

$$\mathbf{Effective\ Permissible\ Carrying\ Capacity = RCC \times MC}$$

$$= 45002.8 \times 0.45$$

$$= \mathbf{20439.1 \text{ or } 20439 \text{ tourists/day}}$$

Total Carrying Capacity for Tawanagar Cluster = 20439 tourists / day

“This carrying capacity is applied when the potential of all the designated tourism zone is realized. However, the responsible authority can restrict or release the number of tourists.”

Annexure 16.1 : Cluster wise block cost estimate.

Cluster-1

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	229.61	Kilo Litre	32,48,967
2	Storage - ESR	12m	1	75.77	Kilo Litre	16,77,569
3	Distribution Network- PVC-O 110 mm dia		23,413		rmt	33,71,472
4	Pump House		1		num ber	85,000
Total						83,83,009
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		23,413.00		rmt	8,89,69,400
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		23.41		km	7,02,39,000
2	Sewage Treatment (Phytorid Technology)		274.16		Kilo litre	1,12,68,933
Total						8,15,07,933
Roads						
1	Widening and Strengthening of Roads		1,58,927.5		sq m	47,67,82,500
Total Estimated Cost						65,56,42,842

Cluster-2

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR					
2	Storage - ESR		1	221	Kilo Litre	31,26,859
3	Distribution Network- PVC-O 110 mm dia	12m	1	73	Kilo Litre	16,14,520
4	Pump House		12,170		rmt	17,52,480
					Total	65,78,858
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		12,170.0		rmt	4,62,46,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		12.2		km	3,65,10,000
2	Sewage Treatment (Phytorid Technology)		263.9		Kilo litre	1,08,45,403
					Total	4,73,55,403
Roads						
1	Widening and Strengthening of Roads		55,890.0		sq m	16,76,70,000
					Total Estimated Cost	26,78,50,261

Cluster-3

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	125	Kilo Litre	17,61,856
2	Storage - ESR	12m	1	41	Kilo Litre	9,09,715
3	Distribution Network- PVC-O 110 mm dia		28,882		rmt	41,59,008
4	Pump House		1		num ber	85,000
Total						69,15,580
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		28,882		rmt	10,97,51,600
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		29		km	8,66,46,000
2	Sewage Treatment (Phytoid Technology)		149		Kilo litre	61,10,938
Total						9,27,56,938
Roads						
1	Widening and Strengthening of Roads		89,145		sq m	26,74,35,000
Total Estimated Cost						47,68,59,118

Cluster-4

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	171	Kilo Litre	24,25,823
2	Storage - ESR	12m	1	57	Kilo Litre	12,52,548
3	Distribution Network- PVC-O 110 mm dia		14,566		rmt	20,97,504
4	Pump House		1		num ber	85,000
Total						58,60,874
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		14,566		rmt	5,53,50,800
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		15		km	4,36,98,000
2	Sewage Treatment (Phytoid Technology)		205		Kilo litre	84,13,885
Total						5,21,11,885
Roads						
1	Widening and Strengthening of Roads		1,16,658		sq m	34,99,74,000
Total Estimated Cost						46,32,97,559

Cluster-5

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	604	Kilo Litre	85,44,348
2	Storage - ESR	12m	1	199	Kilo Litre	44,11,782
3	Distribution Network- PVC-O 110 mm dia		35,730		rmt	51,45,120
4	Pump House		1		num ber	85,000
Total						1,81,86,250
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		35,730		rmt	13,57,74,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		36		km	10,71,90,000
2	Sewage Treatment (Phytoid Technology)		721		Kilo litre	2,96,35,781
Total						13,68,25,781
Roads						
1	Widening and Strengthening of Roads		2,01,180		sq m	60,35,40,000
Total Estimated Cost						89,43,26,032

Cluster-6

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	319	Kilo Litre	45,19,117
2	Storage - ESR	12m	1	105	Kilo Litre	23,33,398
3	Distribution Network- PVC-O 110 mm dia		24,850		rmt	35,78,400
4	Pump House		1		num ber	85,000
Total						1,05,15,915
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		7,310		rmt	2,77,78,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		25		km	7,45,50,000
2	Sewage Treatment (Phytoid Technology)		381		Kilo litre	1,56,74,405
Total						9,02,24,405
Roads						
1	Widening and Strengthening of Roads		63,120		sq m	18,93,60,000
Total Estimated Cost						31,78,78,320

Cluster-7

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	188	Kilo Litre	26,55,867
2	Storage - ESR	12m	1	62	Kilo Litre	13,71,328
3	Distribution Network- PVC-O 110 mm dia		9,770		rmt	14,06,880
4	Pump House		1		num ber	85,000
Total						55,19,076
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		9,770		rmt	3,71,26,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		10		km	2,93,10,000
2	Sewage Treatment (Phytoid Technology)		224		Kilo litre	92,11,786
Total						3,85,21,786
Roads						
1	Widening and Strengthening of Roads		45,900		sq m	13,77,00,000
Total Estimated Cost						21,88,66,861

Cluster-8

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	315	Kilo Litre	44,51,521
2	Storage - ESR	12m	1	104	Kilo Litre	22,98,495
3	Distribution Network- PVC-O 110 mm dia		14,456		rmt	20,81,664
4	Pump House		1		num ber	85,000
Total						89,16,680
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		14,456		rmt	5,49,32,800
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		14		km	4,33,68,000
2	Sewage Treatment (Phytoid Technology)		376		Kilo litre	1,54,39,951
Total						5,88,07,951
Roads						
1	Widening and Strengthening of Roads		75,804		sq m	22,74,12,000
Total Estimated Cost						35,00,69,431

Cluster-9

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	1,081	Kilo Litre	1,52,91,236
2	Storage - ESR	12m	1	357	Kilo Litre	78,95,465
3	Distribution Network- PVC-O 110 mm dia		3,160		rmt	4,55,040
4	Pump House		1		num ber	85,000
Total						2,37,26,741
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		46,910		rmt	17,82,58,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		3		km	94,80,000
2	Sewage Treatment (Phytoid Technology)		1,850		Kilo litre	12,21,21,886
Total						13,16,01,886
Roads						
1	Widening and Strengthening of Roads		23,700		sq m	7,11,00,000
Total Estimated Cost						40,46,86,626

Cluster-10

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	374	Kilo Litre	52,91,292
2	Storage - ESR	12m	1	123	Kilo Litre	27,32,102
3	Distribution Network- PVC-O 110 mm dia		49,190		rmt	70,83,360
4	Pump House		1		num ber	85,000
Total						1,51,91,754
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		30,330		rmt	11,52,54,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		49		km	14,75,70,000
2	Sewage Treatment (Phytoid Technology)		446		Kilo litre	2,94,68,934
Total						17,70,38,934
Roads						
1	Widening and Strengthening of Roads		2,35,785		sq m	70,73,55,000
Total Estimated Cost						1,01,48,39,688

Cluster-11

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	352	Kilo Litre	49,79,206
2	Storage - ESR	12m	1	116	Kilo Litre	25,70,959
3	Distribution Network- PVC-O 110 mm dia		35,410		rmt	50,99,040
4	Pump House		1		num ber	85,000
Total						1,27,34,205
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		35,410		rmt	13,45,58,000
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		35		km	10,62,30,000
2	Sewage Treatment (Phytoid Technology)		420		Kilo litre	1,72,70,207
Total						12,35,00,207
Roads						
1	Widening and Strengthening of Roads		9,500		sq m	2,85,00,000
Total Estimated Cost						29,92,92,413

Cluster-12

Water Infrastructure for MP CDP						
No	Name of Work	Height	Quantity	Capacity	Unit	Rate (Rs.)
Water Supply						
1	Storage - GLSR		1	300	Kilo Litre	42,38,921
2	Storage - ESR	12m	1	99	Kilo Litre	21,88,721
3	Distribution Network- PVC-O 110 mm dia		4,689		rmt	6,75,216
4	Pump House		1		num ber	85,000
Total						
Storm Water Drain						
1	0.45 * 0.45 Mt internal for road width up to 12 mt		4,689		rmt	1,78,18,200
Sewerage Network						
1	Sewer Collecting System (for RCC NP3, 0.7 Kg/Cm2)		5		km	1,40,67,000
2	Sewage Treatment (Phytoid Technology)		358		Kilo litre	1,47,02,554
Total						2,87,69,554
Roads						
1	Widening and Strengthening of Roads		23,370		sq m	7,01,10,000
Total Estimated Cost						12,38,85,613

Annexure 17.1 : Submission of Draft Zonal Master Plan Report to Monitoring Committee.

SAI Ref: [SAI/BAUP219009/HO/0966/2019]
MPTB Ref: [Contract Agreement signed between Madhya Pradesh Tourism Board (Bhopal) and SAI Consulting Eng. Pvt Ltd (Ahmedabad) dated 28th February 2019]
From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Divisional Commissioner,
Narmadapuram Division,
Hoshangabad, Madhya Pradesh

June 30, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh

Dear Sir,

In continuation with the above-mentioned subject, we are pleased to submit herewith the Second Stage report (Draft Zonal Master Plan) as per Point 4.4 General Scope of Work for Preparation of Zonal Master Plan; Note 7: Stages of Submission and Payment Schedule; Sr. No. 3: Draft Zonal Master Plan Report covering all the proposals, strategies and recommendations along with Development Control regulations, institutional framework and proposed landuse map for Eco Sensitive Zone of Satpura Tiger Reserve. The same report is also submitted to the Divisional Commissioner, Narmadapuram and The Field Director, Satpura Tiger Reserve for their approval and stakeholder consultation.

With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Encl:

1. Report of Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve
2. Proposed Landuse Maps (scale to fit) for Eco Sensitive Zone of Satpura Tiger Reserve

SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company

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Phone : +91-79-6614 2600 | E-mail : mail.sai@systra.com | Web : www.saiindia.com | CIN : U74140GJ1983PTC005900

SAI Ref: [SAI/BAUP219009/HO/0968/2019]
From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@sysstra.com

To,
The Field Director,
Office of Satpura Tiger Reserve
Hoshangabad, Madhya Pradesh

June 30, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh

Dear Sir,

In continuation with the approval of Baseline Assessment report from Madhya Pradesh Tourism Board, Bhopal, we are pleased to submit the next stage submission report i.e. Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve for your approval and Stakeholder Consultation. This report is covering all the proposals (Infrastructure, tourism and conservation), strategies and recommendations along with Development Control regulations, institutional framework and proposed landuse map for Eco Sensitive Zone of Satpura Tiger Reserve. Kindly give comments and suggestions for the same if any.

With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Encl:

1. Report of Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve
2. Proposed Landuse Map for Eco Sensitive Zone of Satpura Tiger Reserve

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SAI Ref: [SAI/BAUP219009/HO/1030/2020]
From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Divisional Commissioner,
Narmadapuram Division,
Hoshangabad, Madhya Pradesh

July 07, 2020

Subject: Submission of One hard copy of Draft Zonal Master Plan and Sub Zonal Tourism Master Plan of Eco Sensitive Zone listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) to the office of Divisional Commissioner, Narmadapuram Division.

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
3. SAI Letter No: SAI/BAUP219009/HO/0966/2019 dated 30th June 2020 for submission of Draft Zonal Master Plan Report for Eco Sensitive Zone listed in cluster 4.
4. Communication from The Divisional Commissioner Office via E-mail on 2nd July 2020 for submission of hardcopy of draft zonal master plan report

Respected Sir,

In continuation with our submission of Draft Zonal Master Plan Report for Eco Sensitive Zone of Satpura Tiger Reserve as referred in Sr. no 3 and as communicated through email as referred in Sr. no.4, we are submitting hard copy of the draft zonal master plan report along with maps for your kind perusal.

In addition to that, kindly find enclosed herewith hard copy of executive summary of draft zonal master plan report which is a brief of all the components covered in Draft zonal master plan report. We are also sending you the executive summary of baseline assessment study report for your ready reference.

In continuation with the same, we are supposed to conduct stakeholder consultation in presence of Notified Monitoring Committee, concerned government departments and other stakeholders to have their inputs and suggestions. This is in line with presentation for Baseline assessment study organised by then Divisional Commissioner at Hotel Glen View, Pachmarhi on October 04, 2019. This meeting was chaired by then Divisional Commissioner and attended by other Notified Monitoring Committee members, members of concerned government departments and other stakeholders. This meeting was very successful to have concerns and suggestions (All the received concerns and suggestions were recorded in Minutes of Meeting, approved by The Divisional Commissioner on date 18/10/2019) of all the attendees for preparing accurate Baseline Assessment Study of ESZ.

On same line, kindly give us your appropriate time to organise stakeholder consultation meeting for the draft stage. We also request you to issue a letter to other Monitoring Committee members, concerned departments and other stakeholders for attending this consultation meeting.

SAI Consulting Engineers Pvt. Ltd.

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Looking at the current COVID-19 pandemic situation, we will also be able to conduct stakeholder consultation on digital platform if possible.

With Regards,

For, SAI Consulting Engineers Pvt. Ltd.


(Nisarg Thakur)
for, **Karn K. Joshi**
Team Leader
[Urban Planning & SEZ]

Encl:

1. *One hard copy of Draft Zonal Master Plan Report and Proposed Landuse Landcover Maps for Eco Sensitive Zonal Master Plan of Satpura Tiger Reserve*
2. *Executive Summary of Draft Zonal Master Plan and Baseline Assessment Study*



SAI Ref: [SAI/BAUP219009/HO/1051/2019]

From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Chief Executive Officer,
Jilla Panchayat
Hoshangabad,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
3. MoM of Stakeholder consultation meeting for baseline assessment study of Satpura Tiger Reserve Eco-sensitive zone
4. Our Letter no. SAI/BAUP219009/HO/1030/2020 for Submission of One hard copy of Draft Zonal Master Plan and Sub Zonal Tourism Master Plan of Eco Sensitive Zone listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) to the office of Divisional Commissioner, Narmadapuram Division.

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from office of Madhya Pradesh Tourism Board as referenced above in Sr no. 1 and 2.

With the approval of Baseline Assessment report from Madhya Pradesh Tourism Board, Bhopal, we are pleased to submit the next stage submission report i.e. Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve for your review. This report is covering all the proposals (Infrastructure, tourism and conservation), strategies and recommendations along with Development Control regulation guidelines, institutional framework and proposed land-use landcover map for Eco Sensitive Zone of Satpura Tiger Reserve. Kindly provide your valuable comments and suggestions for the same.

Looking at the current COVID-19 pandemic situation, it is difficult for us to travel from home office. Hence, we have prepared an executive summary of draft report (along with the summary of baseline assessment report) to brief all the proposals of the draft stage for your convenience.

To be more convenient to discuss proposals, we have also prepared a small presentation covering above said draft proposals. Kindly provide us your suitable time to discuss the same on digital platform.

SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company

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Phone: +91-79-66142600 | E-mail: mail.sai@systra.com | Web: www.systra.com | CIN : U74140GJ1983PTC005900

With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

1. *The Divisional Commissioner, Narmadapuram Division, Hoshangabad*
2. *The District Collector, Hoshangabad District*

Encl:

1. *MoM Stakeholder consultation meeting for Baseline Assessment Report*
2. *Report of Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve*
3. *Proposed Land-use Landcover Maps for Eco Sensitive Zone of Satpura Tiger Reserve*
4. *Executive summary of baseline assessment report*
5. *Executive Summary of Draft zonal plan report*

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SAI Ref: [SAI/BAUP219009/HO/1052/2019]

From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Chief Executive Officer,
Jilla Panchayat
Chhindwara,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
3. MoM of Stakeholder consultation meeting for baseline assessment study of Satpura Tiger Reserve Eco-sensitive zone
4. Our Letter no. SAI/BAUP219009/HO/1030/2020 for Submission of One hard copy of Draft Zonal Master Plan and Sub Zonal Tourism Master Plan of Eco Sensitive Zone listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) to the office of Divisional Commissioner, Narmadapuram Division.

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from office of Madhya Pradesh Tourism Board as referenced above in Sr no. 1 and 2.

With the approval of Baseline Assessment report from Madhya Pradesh Tourism Board, Bhopal, we are pleased to submit the next stage submission report i.e. Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve for your review. This report is covering all the proposals (Infrastructure, tourism and conservation), strategies and recommendations along with Development Control regulation guidelines, institutional framework and proposed land-use landcover map for Eco Sensitive Zone of Satpura Tiger Reserve. Kindly provide your valuable comments and suggestions for the same.

Looking at the current COVID-19 pandemic situation, it is difficult for us to travel from home office. Hence, we have prepared an executive summary of draft report (along with the summary of baseline assessment report) to brief all the proposals of the draft stage for your convenience.

To be more convenient to discuss proposals, we have also prepared a small presentation covering above said draft proposals. Kindly provide us your suitable time to discuss the same on digital platform.

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With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

1. *The Divisional Commissioner, Jabalpur Division, Jabalpur*
2. *The District Collector, Chhindwara District*

Encl:

1. *MoM Stakeholder consultation meeting for Baseline Assessment Report*
2. *Report of Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve*
3. *Proposed Land-use Landcover Maps for Eco Sensitive Zone of Satpura Tiger Reserve*
4. *Executive summary of baseline assessment report*
5. *Executive Summary of Draft zonal plan report*

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SAI Ref: [SAI/BAUP219009/HO/1053/2019]
From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The District Collector,
Chhindwara,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
3. MoM of Stakeholder consultation meeting for baseline assessment study of Satpura Tiger Reserve Eco-sensitive zone
4. Our Letter no. SAI/BAUP219009/HO/1030/2020 for Submission of One hard copy of Draft Zonal Master Plan and Sub Zonal Tourism Master Plan of Eco Sensitive Zone listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) to the office of Divisional Commissioner, Narmadapuram Division.

Respected Sir,

We would like to bring to your kind notice that the SAI Consulting Engineers Pvt. Ltd. is preparing the Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive zone listed in Cluster 4 of Madhya Pradesh vide work order issued from office of Madhya Pradesh Tourism Board as referenced above in Sr no. 1 and 2.

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SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company

Regd. Office: Block-A • SAI House • Satyam Corporate Square • B/h. Rajpath Club • Bodakdev • Ahmedabad - 380059 • INDIA

Phone: +91-79-66142600 | E-mail: mail.sai@systra.com | Web: www.systra.com | CIN : U74140GJ1983PTC005900

With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

The Divisional Commissioner, Jabalpur Division, Jabalpur.

Encl:

1. *MoM Stakeholder consultation meeting for Baseline Assessment Report*
2. *Report of Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve*
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SAI Ref: [SAI/BAUP219009/HO/1054/2020]

From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The District Collector,
Hoshangabad,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

1. Workorder no. 918/Plg/MPTB for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
2. MPTB Letter no. 223/PLG/MPTB/2019 dated 16/01/2020 for Extension of Work order for preparation of Zonal Master Plan of Eco Sensitive Zone- Satpura National Park and Pachmarhi and Bori Wildlife Sanctuary) of Madhya Pradesh
3. MoM of Stakeholder consultation meeting for baseline assessment study of Satpura Tiger Reserve Eco-sensitive zone
4. Our Letter no. SAI/BAUP219009/HO/1030/2020 for Submission of One hard copy of Draft Zonal Master Plan and Sub Zonal Tourism Master Plan of Eco Sensitive Zone listed in Cluster 4 (Satpura National Park, Pachmarhi and Bori Wildlife Sanctuary) to the office of Divisional Commissioner, Narmadapuram Division.

Respected Sir,

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With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

The Divisional Commissioner, Narmadapuram Division, Hoshangabad

Encl:

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SAI Ref: [SAI/BAUP219009/HO/1055/2020]

From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Divisional Commissioner,
Jabalpur,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

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With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

The Divisional Commissioner, Narmadapuram Division, Hoshangabad

Encl:

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SAI Ref: [SAI/BAUP219009/HO/1056/2019]

From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The Chief Executive Officer,
Jilla Panchayat,
Betul,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

Reference:

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With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

The Divisional Commissioner, Narmadapuram Division, Hoshangabad
The District Collector, Betul

Encl:

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SAI Ref: [SAI/BAUP219009/HO/1057/2019]

From:
Karn K. Joshi
Phone: +91-7567198158
kjoshi1@systra.com

To,
The District Collector,
Betul,
Madhya Pradesh

July 09, 2020

Subject: Submission of Draft Zonal Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

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With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Karn K. Joshi
[Urban Planning & SEZ]

Cc:

The Divisional Commissioner, Narmadapuram Division, Hoshangabad

Encl:

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Phone: +91-79-66142600 | E-mail: mail.sai@systra.com | Web: www.systra.com | CIN : U74140GJ1983PTC005900

Annexure 17.2 : Comments and Suggestions Received from Monitoring Committee Members on Draft Zonal Master Plan**OFFICE OF THE FIELD DIRECTOR SATPURA TIGER RESERVE,
HOSHANGABAD (M.P.)**

Ph :- 07574-254394

Pipariya Road, Hoshangabad Pin :- 461001

Fax :- 07574-252133

Email :- ddsatnp.hbd@mp.gov.in

No./DM/...5169...

Hoshangabad Dated.15/7/2

To,

Shri Nisarg Thaki,


SAI Consulting Engineers Pvt. Ltd.

Sub. Comments regarding draft sub Zonal Master Plan for ESZ of STR.

-----000-----

Dear Nisarg,

I have gone through the draft of Zonal Plan. Some suggestion are recorded which are attached for consideration.

Attach :- as per above
(S.K.Singh)CCF& Field Director
Satpura Tiger Reserve
Hoshangabad
o/c [initials]D/data/DM Branch/later new 1 le
538

Comments on Zonal Master Plane of ESZ of STR

Under para 6.2

(1) **Table No 6-1**

A wildlife tourism zone.

Kahmda- No. of totourist is in carrying capacity for Safari and camping in 407, It is on higher sjde as no infrastructure can support more than 200 tourists otherwise it will createnuisance to wildlife.

B- Recreational zone:

1 estimation of Dokri Kheda and TawaNagar are too high. The population around and estimated in flux from neighboring areas could not meet this number.Socioeconomic status and infrastructure development does not permit that huge number

2 At Tawa Nagar cruise & house boating is proposed by MPT, Cruise is plying in Tawa Reservoir at present.

C- Natural Heritage Tourism

1 Alimode-Baruth- Rethink about Ropeway where it will be installed also keep site distance in mind.

D- Commercial:-

No accommodation is available on all three sites. Do you consider accommodation at matkuli ?

Under para 6.3

1 At many places, tourist facilities as lounge Rest Room (Toilet and Bathroom are separately mentioned) Auditorium are suggested. No permanent structure can be created on forest land under eco-tourism guidelines. temporary structures can be provided with reusable materials.

Page 7.5, page 47 Industrial Area can be developed at Bagra also being rail head and near to Babai an important agribased market.

Para 8.2 forest & Biodiversity

Table 8.1

3- Encroachment-It is dealt under India forest Act 1972 not in FCA 1980 for forest land and under Land Revenue Code for Revenue Land.

(S.K.Singh)

CCF& Field Director
Satpura Tiger Reserve
Hoshangabad

D/data/DM Branch/later new 1 le
537

Office of The Chief Executive Officer zila panchyat chhindwara (M.P.)

Latt.no/ /zp/2020
2002

chhindwara date 22/7 2020

TO,

Mr Nisarg
Sai consulting engineers
Pvt.ltd.

Sub:- Submission of Zonal Master plan Report for Prepration of Zonal Master plans for
Eco Sensitive Zones listed in cluster 4 of M.P.

Ref:- your email.reciveed on 09th july 2020

Thanks Nisarg,

It is really very remarkable development as Sai consulting services on behalf of Mp tourism board is working on zonal master planning in Satpura national park and bori wildlife sanctuary.

As for as chhindwara distret concern it will be very important gateway of Eco and ethnic tourism as Almod and Kukarpani are parallel of Mahadev hills.

Also inculcating on the cultural bent, one important Mahadev mela (in month of February) is also falls in this area in Sangakhera; so it should consider that some economical activities also be taken place.


Whole this area is in high in altitude, one or more waterfall r there.. it can be develop as Mansoon Destination. And hub of Eco and agro tourism . Please consider some business opportunity for the local tribble fellow.

Through SRLM some women groups also working on the collection of NTFP produces, we are also in the process to build their capacity in processing and marketing.

In master planning we should also consider the activities of upliftment of the economy of local people. They ought to be part of tourism activity as tourist guide ,home staying , local harbal tharapy spritual healing ,and through folk art and craft.

One important suggestion should be taken in consideration that there must be one open in Bori wildlife sanctuary some where at Kukarpani as district also can explore the opportunities of whole.

Looking forward


22-07-2020

(Gajendra)
Chief Executive Officer
Zila panchyat chhindwara

// कार्यालय जिला पंचायत होशंगाबाद //

Ph.No. (07574) 253362, Fax. 251727, E-mail- ceozphos@mp.gov.in

कर्मोंक / 5293 / जि.पं. / 20
प्रति,

होशंगाबाद, दिनांक 27/07/2020

उपसंचालक
सतपुडा टाईगर रिजर्व
होशंगाबाद

विषय— Submission of Draft Master Plan Report for Preparation of Zonal Master Plans for Eco Sensitive Zones listed in Cluster 4 of Madhya Pradesh

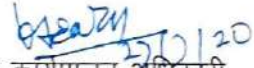
संदर्भ— मुख्य कार्यपालन अधिकारी को साई कंसल्टिंग इंजीनियर्स प्रा.लि.ए-ब्लाक साई हाउस बोडकदेव अहमदाबाद का पत्र कं.Sai Ref (SAI/SAUP219009/HO/1051/2019) DATE 9-7-2020

=0=

विषयांतर्गत संदर्भित पत्र के साथ संलग्न उक्त संदर्भित पत्र का अवलोकन करने का कष्ट करें जिसके माध्यम से साई कंसल्टिंग इंजीनियर्स प्रा.लि. द्वारा इको सेंसेटिव जोन में जोनल मास्टर प्लान के संबंध में ड्राफ्ट प्रेषित किया गया है।

संस्थान द्वारा प्रेषित उक्त विस्तृत ड्राफ्ट के संबंध में क्षेत्रांतर्गत प्रस्तावित परियोजना का अवलोकन व परीक्षण करें, पत्र में उल्लेखित अपेक्षा अनुरूप आपके स्तर से उपयुक्त सुझाव संबंधितों को प्रेषित करते हुए परियोजना के क्षेत्रांतर्गत क्रियान्वयन हेतु अधिकृत सहमति प्रेषित करने का कष्ट करें।

संलग्न—उपरोक्तानुसार



मुख्य कार्यपालन अधिकारी
जिला पंचायत, होशंगाबाद

पृ.कर्मोंक / 5294 / जि.पं. / 20

होशंगाबाद, दिनांक 27/07/2020

प्रतिलिपि—

1. कलेक्टर महोदय जिला होशंगाबाद की ओर सूचनार्थ प्रेषित।
- 2- Mr.Karan k Joshi , Urban Planning &SEZ For Sai Consulting Engineers Pvt.Ltd. ए-ब्लाक साई हाउस, सत्यम कारपोरेट चौक, बोडकदेव अहमदाबाद(गुजरात) की ओर आपके उक्त संदर्भित पत्र के तारतम्य में सूचनार्थ प्रेषित।


मुख्य कार्यपालन अधिकारी
जिला पंचायत, होशंगाबाद

कार्यालय कार्यपालन यंत्री, लोक स्वास्थ्य यांत्रिकीय खण्ड, बैतूल (म०प्र०)
दूरभाष (07141) कार्यालय 238320, Email - eephedbet@mp.nic.in

क्र०-२५१९ / तक० / का०यं० / लो०स्वा०यां० खण्ड, बैतूल
प्रति,

दिनांक : २५-९-२०२०

आयुक्त
नर्मदापुरम संभाग
होशंगाबाद

विषय :- इको सेन्सेटिव जोन मध्यप्रदेश के लिये जोनल मास्टर प्लान पर सुझाव देने बाबत।
संदर्भ :- आपका पत्र क्रमांक 2927 दिनांक 16.09.2020

—:—:—:—:—


उपरोक्त विषय में निवेदन है कि आपके संदर्भित पत्र के माध्यम से साई कन्सल्टेशन इंजीनियर्स प्रा.लि. अहमदाबाद द्वारा इको सेन्सेटिव जोन में मास्टर प्लान के संबंध में प्रेषित ड्राफ्ट का अध्ययन किया गया।

इस तैयार ड्राफ्ट में पेयजल से संबंधित अवयवों का समावेश किया गया अतः विभाग इस ड्राफ्ट से सहमत है। इसके अतिरिक्त भूजल संवर्धन के कार्यों को भी सम्मिलित किया जाना उचित होगा।


कार्यपालन यंत्री
लोक स्वास्थ्य यांत्रिकीय खण्ड
बैतूल (म०प्र०)

पृ०क्र० २५१९ / तक० / का०यं० / लोक स्वा०यां०खण्ड बैतूल , दिनांक : २५-९-२०२०
प्रतिलिपि :-

कलेक्टर जिला बैतूल की ओर सादर सूचनार्थ प्रेषित।


कार्यपालन यंत्री
लोक स्वास्थ्य यांत्रिकीय खण्ड
बैतूल (म०प्र०)

कार्यालय कार्यपालन यंत्री
लोक स्वास्थ्य यांत्रिकी खंड, होशंगाबाद

क्रमांक 2381 / तक / क.य. / लो.स्वा.यां. / 2020 / होशंगाबाद
प्रति,

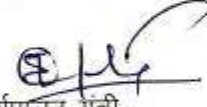
दिनांक 22/10/2020

आयुक्त महोदय,
नर्मदापुरम् संभाग
होशंगाबाद

विषय :- इको सेन्सेटिव जोन मध्यप्रदेश के लिये जोनल मास्टर प्लान पर सुझाव देने बाबत।
संदर्भ :- आपका पत्र क्रमांक 4927 दिनांक 16.09.2020

उपरोक्त विषयान्तर्गत लेख है कि आपके संदर्भित पत्र के माध्यम से साई कन्सल्टिंग इंजीनियर्स प्रा.लि. अहमदाबाद द्वारा इको सेन्सेटिव जोन में तैयार किये गये जोनल मास्टर प्लान के ड्राफ्ट का अध्ययन किया गया।

उक्त ड्राफ्ट में पेयजल से संबंधित अवयवों का समावेश किया गया है, तथा भूजल संवर्धन के कार्यों को भी सम्मिलित किया गया है। अतः विभाग तैयार किये गये ड्राफ्ट से सहमत है।


कार्यपालन यंत्री
लोक स्वास्थ्य यांत्रिकी खंड
होशंगाबाद

पृ. क्रमांक / तक / क.य. / लो.स्वा.यां. / 2020 / होशंगाबाद
प्रतिलिपि :-

01. कलेक्टर महोदय जिला होशंगाबाद की ओर सूचनार्थ प्रेषित।
02. श्री कर्ण के.जोशी, टीम लीडर (अर्बन प्लानिंग), साई कन्सल्टिंग इंजीनियर्स प्रा.लि. अहमदाबाद की ओर सूचनार्थ प्रेषित।

1
कार्यपालन यंत्री
लोक स्वास्थ्य यांत्रिकी खंड
होशंगाबाद



SAI Ref: [SAI/BAUP219009/HO/0819/2021]
From:
Nisarg Thanki
Phone: +91-9712248088
nthanki@systra.com

To,
The Field Director,
Satpura Tiger Reserve,
Hoshangabad,
Madhya Pradesh

May 12, 2021

Subject: Regarding Minutes of Minutes of discussion for Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve

Reference:

1. Tele-conference meeting on 04/05/2021 and 12/05/2021 regarding discussion on the zonal master plan for eco sensitive zone of Satpura Tiger Reserve.

Respected Sir,

We have prepared Minutes of Meeting of your suggestions/ comments on Zonal Master Plan reports for Eco-Sensitive Zone of Satpura Tiger Reserve of meeting referred in Sr. 1. Kindly find enclosed herewith Minutes of Minutes for your review and approval. Kindly revert the Minutes of Meeting duly signed by you.

Thanking you for your support and cooperation.

With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Nisarg Thanki
Urban Planner
[Urban Planning & SEZ]

Encl:

1. Minutes of Meeting regarding discussion of Zonal Master Plan for Eco-Sensitive Zone of Satpura Tiger Reserve on date 04/05/2021 and 12/05/2021.

SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company

Regd. Office: Block-A • SAI House • Satyam Corporate Square • B/h. Rajpath Club • Bodakdev • Ahmedabad - 380059 • INDIA

Phone: +91-79-66142600 | E-mail: mail.sai@systra.com | Web: www.systra.com | CIN : U74140GJ1983PTC005900

Preparation of ZMP for ESZ for Cluster 4 MP - Minutes of the Meeting

Subject	Minutes of the Meeting for discussion with the Field Director for Preparation of Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve) of Madhya Pradesh	
Meeting Date	4 th May 2021 & 12 th May 2021	
Place	The tele-conferencing with the Field Director, Satpura Tiger Reserve.	
Participants	<i>From Stakeholder</i>	<i>From SAI Consulting Engineers Pvt. Ltd.</i>
	The Field Director, Satpura Tiger Reserve	Mr. Karn Joshi, Team leader
		Mr. Kewal Rana, Urban Planner
		Mr. Nisarg Thanki, Urban Planner
S. No.	Points Discussed/suggestions made	
1.	Team of SAI Consulting Engineers Pvt Ltd – A Systra group Company had brief discussion with the Field Director regarding Zonal Master Plans for Eco Sensitive Zone of Satpura National Park, Bori wildlife Sanctuary and Pachmarhi Wildlife Sanctuary of Madhya Pradesh. This discussion was carried out in continuation with the comment received from the evaluation committee meeting held on 23 rd March 2021 regarding approval of draft zonal master plan for Satpura Tiger Reserve.	
2.	<ul style="list-style-type: none"> The Field Director advised to prepare a map of NO-GO zone and restricted zones for commercial development in areas of Green Corridors. It is also suggested that No-Objection Certificate to be obtained for any kind of development and construction activities in Eco-Sensitive Zone from office of Satpura Tiger Reserve. 	
3.	<p>A brief discussion was carried out regarding the proposed land use landcover.</p> <ul style="list-style-type: none"> It was suggested that the ground coverage for resorts (Proposed Land use as ET2 and ET3 in the report) should be around 10% of total plot area. The same should be referred as per the guidelines of Town and Country Planning Department. Higher percentage of ground coverage can be proposed for home stay. A broad level guideline can be incorporated for the material for construction and type of boundary walls for commercial developments. These should be referred from NTCA guidelines. It was further discussed that only monitoring committee have authority to decide upon change of land use and control on development through NTCA guidelines. In response to that as per notification S.O.2538(E), In exercise of the powers conferred by sub-section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government constitutes a Monitoring Committee for a period of three years, for effective monitoring of the Eco-sensitive Zone. After commencement for three years, either monitoring committee should be extended or same decisions shall be taken under purview of LAC. 	
4.	<p>Suggestions given in Part-1 of draft report prepared for Zonal Master Plan is given below:</p> <ul style="list-style-type: none"> A separate map for Protected areas and Eco-Sensitive zone with Tiger Reserve to be replaced in place of Figure 1.6, Page no. 12. A satellite imagery should be added in figure no. 1.9, Page no. 15 showing green corridors to show the better connectivity of forests. 	

Preparation of ZMP for ESZ for Cluster 4 MP - Minutes of the Meeting

	<ul style="list-style-type: none"> • The map showing extent of the Pachmarhi biosphere reserve to be included in section 1.10.2. Same map will be provided by the Field Director, STR at the earliest. • It is suggested by the Field Director that <i>Bambusa Polymorpha</i>, Grey jungle fall, and skimmer should be incorporated as an important species of biosphere. FD Sir also suggested to format all botanic and scientific names in Italic style. • It was discussed to mention of buffer zone of STR for grazing in section 1.12. He further added to mention the Satpura Tiger Reserve office in Table 1.7 (Data collected from different departments). • FD sir also suggested to display the unavailability of census data for respective villages in one table coming under ESZ area. In response to the comment, team of consultant suggested that it has been incorporated in report vide section 3.2 of Part-1. FD sir suggested to display the same in table format, which has been incorporated. • A classification of forest area, revenue area and Protected Areas should be mentioned in section 2.2, Page no. 28 (Part-1 of Report). • It was further discussed that a Grand total and sub totals for population should displayed for clear reference and idea of situation in section 3.2. It was asked during discussion to increase the visibility for charts and maps given in section 3.2. • In section 3.7.2, it should mention clearly that the collection of NTFP are only allowed in buffer zone of STR. The collection is not allowed in areas of PAs and core. • It was suggested during discussion to remove locations of Bori and Dhain from important tourism destination from section 5.4 as the tourism is not allowed in the area. Further it was suggested to classify it further as tourism in core and tourism in buffer. • Tourism accommodation facilities shall also include the private accommodation facilities in buffer areas of STR in section 5.7. This data should be collected from MPTB.
5.	The Field Director suggested to continue the process of approval from other state departments which should be initiated by MPTB. He will provide his suggestions related to forest and other related chapters by end of this week.
6.	During the discussion on 12/05/2021, the Field Director suggested to mention guidelines of Wildlife Institute of India (WII) in section 11.4 for conservation measures for linear infrastructure. The same has been incorporated in report.
7.	The Field Director suggested to replace the name of Madhai Cluster with Parsapani Cluster, as Madhai is part of Core Area.
8.	The Field Director cross verified methodology for calculating carrying capacity. IN reply of the same, consultant assured that the methodology is as per MoEFCC guidelines which is most suitable for the project.
9.	The Field Director has asked about implementing strategy and agency for Solid Waste Management in Pachmarhi. In response to that, section 11.6 of chapter 11 of ZMP was explained by the consultant, which broadly explains implementing strategy with roles and responsibility (Table 11.9) for implementing agency for Solid Waste Management.

The meeting ended with vote of thanks.

Preparation of ZMP for ESZ for Cluster 4 MP - Minutes of the Meeting

	<ul style="list-style-type: none"> • The map showing extent of the Pachmarhi biosphere reserve to be included in section 1.10.2. Same map will be provided by the Field Director, STR at the earliest. • It is suggested by the Field Director that <i>Bambusa Polymorpha</i>, Grey jungle fall, and skimmer should be incorporated as an important species of biosphere. FD Sir also suggested to format all botanic and scientific names in Italic style. • It was discussed to mention of buffer zone of STR for grazing in section 1.12. He further added to mention the Satpura Tiger Reserve office in Table 1.7 (Data collected from different departments). • FD sir also suggested to display the unavailability of census data for respective villages in one table coming under ESZ area. In response to the comment, team of consultant suggested that it has been incorporated in report vide section 3.2 of Part-1. FD sir suggested to display the same in table format, which has been incorporated. • A classification of forest area, revenue area and Protected Areas should be mentioned in section 2.2, Page no. 28 (Part-1 of Report). • It was further discussed that a Grand total and sub totals for population should displayed for clear reference and idea of situation in section 3.2. It was asked during discussion to increase the visibility for charts and maps given in section 3.2. • In section 3.7.2, it should mention clearly that the collection of NTFP are only allowed in buffer zone of STR. The collection is not allowed in areas of PAs and core. • It was suggested during discussion to remove locations of Bori and Dhain from important tourism destination from section 5.4 as the tourism is not allowed in the area. Further it was suggested to classify it further as tourism in core and tourism in buffer. • Tourism accommodation facilities shall also include the private accommodation facilities in buffer areas of STR in section 5.7. This data should be collected from MPTB.
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The meeting ended with vote of thanks.

Re: Regarding Minutes of Minutes of discussion for Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve

Field Director Satpura Tiger Reserve <fdsatnp.hbd@mp.gov.in>

Thu 5/13/2021 1:38 PM

To: THANKI Nisarg <nthanki@systra.com>

Dear Nisarg,

I have given my suggestions in the last two web meetings. Mitigation measures for all the linear development projects in the ESZ should adopt the guidelines issued by MOEFF&CC and WII, Dehradun. The same you may get it from ministry or WII website. The legends which are given in the maps are not readable easily, it may be improved in the final print otherwise it will be easy to interpret the legends. If you need any map from our office you can contact our office.

With wishes

Field Director

Satpura

From: nthanki@systra.com**To:** "Field Director Satpura Tiger Reserve" <fdsatnp.hbd@mp.gov.in>**Cc:** kjoshi1@systra.com, krana@systra.com**Sent:** Wednesday, May 12, 2021 4:19:19 PM**Subject:** Regarding Minutes of Minutes of discussion for Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve**To,****The Field Director,****Satpura Tiger Reserve,****Hoshangabad, Madhya Pradesh.****Subject:** Regarding Minutes of Minutes of discussion for Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve

Respected Sir,

We have prepared Minutes of Meeting of your suggestions/ comments on Zonal Master Plan reports for Eco Sensitive Zone of Satpura Tiger Reserve of meeting dated 04/05/2021 and 12/05/2021. Kindly find enclosed herewith Minutes of Minutes for your review and approval. Kindly revert the Minutes of Meeting duly signed by you.

Thanking you for your support and cooperation.

With Regards,

Nisarg Thanki

Urban Planner

SAI Consulting Engineers-SYSTRA group

=====
This message has been scanned for malware. This message and any attachments (the "message") are confidential, intended solely for the addressees, and may contain legally privileged information. Any unauthorised use or dissemination is prohibited. E-mails are susceptible to alteration. Neither our company or any of its subsidiaries or affiliates shall be liable for the message if altered, changed or falsified.
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Ce message a ete verifie et ne contient pas de programme malveillant. Ce message et toutes les pieces jointes (ci-apres le "message") sont confidentiels et susceptibles de contenir des



SAI Ref: [SAI/BAUP219009/HO/0819/2021]
From:
Nisarg Thanki
Phone: +91-9712248088
nthanki@systra.com

To,
The Field Director,
Satpura Tiger Reserve,
Hoshangabad,
Madhya Pradesh

May 12, 2021

Subject: Regarding Minutes of Minutes of discussion for Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve

Reference:

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Respected Sir,

We have prepared Minutes of Meeting of your suggestions/ comments on Zonal Master Plan reports for Eco-Sensitive Zone of Satpura Tiger Reserve of meeting referred in Sr. 1. Kindly find enclosed herewith Minutes of Minutes for your review and approval. Kindly revert the Minutes of Meeting duly signed by you.

Thanking you for your support and cooperation.

With Regards,
For, SAI Consulting Engineers Pvt. Ltd.



Nisarg Thanki
Urban Planner
[Urban Planning & SEZ]

Encl:

1. Minutes of Meeting regarding discussion of Zonal Master Plan for Eco-Sensitive Zone of Satpura Tiger Reserve on date 04/05/2021 and 12/05/2021

SAI Consulting Engineers Pvt. Ltd.

An ISO 9001 Company


Regd. Office: Block-A • SAI House • Satyam Corporate Square • B/h. Rajpath Club • Bodakdev • Ahmedabad - 380059 • INDIA

Phone: +91-79-66142600 | E-mail: mail.sai@systra.com | Web: www.systra.com | CIN : U74140GJ1983PTC005900

Preparation of ZMP for ESZ for Cluster 4 MP - Minutes of the Meeting

Subject	Minutes of the Meeting for discussion with the Field Director for Preparation of Zonal Master Plan and Sub-Zonal Tourism Master Plan for Eco-Sensitive Zone listed in Cluster 4 (Satpura Tiger Reserve) of Madhya Pradesh	
Meeting Date	4 th May 2021 & 12 th May 2021	
Place	The tele-conferencing with the Field Director, Satpura Tiger Reserve.	
Participants	<i>From Stakeholder</i>	<i>From SAI Consulting Engineers Pvt. Ltd.</i>
	The Field Director, Satpura Tiger Reserve	Mr. Karn Joshi, Team leader
		Mr. Kewal Rana, Urban Planner
		Mr. Nisarg Thanki, Urban Planner
S. No.	Points Discussed/suggestions made	
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4.	<p>Suggestions given in Part-1 of draft report prepared for Zonal Master Plan is given below:</p> <ul style="list-style-type: none"> A separate map for Protected areas and Eco-Sensitive zone with Tiger Reserve to be replaced in place of Figure 1.6, Page no. 12. A satellite imagery should be added in figure no. 1.9, Page no. 15 showing green corridors to show the better connectivity of forests. 	

Annexure 17.3 : Letters sent to various departments by MPTB



The heart of
Incredible India

मध्यप्रदेश टूरिज़्म बोर्ड
Madhya Pradesh Tourism Board

No. 2207/PLG/MPTB/2021 Dated: 21.10.2021

To,
Additional Chief Secretary
Panchayat & Rural Development Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapters "Section for Infrastructure and Section for Traffic and Transportation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

In the said Gazette notifications, Govt. of M.P. was given responsibility to prepare Zonal Master Plan of Eco-Sensitive Zone of notified National Parks and Sanctuaries within a period of 2 years from the date of publication of notification in the official Gazette. Therefore, Madhya Pradesh Tourism Board has taken the initiative to prepare the Zonal Master Plans of Eco-Sensitive Zone. In the notification, Govt. Departments are mentioned as stakeholders and in consultation with these departments, Zonal Master Plans shall be prepared.


Under the umbrella of Zonal Master Plan for Eco-Sensitive Zones, initiative of Madhya Pradesh Government and the guidelines of Ministry of Environment, Forest and Climate Change (MoEFCC), protected area of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, is taken by consultant M/s. SAI Consultant Engineers Pvt. Ltd. to prepare Zonal Master Plan for its Eco-Sensitive Zone with an objective to protect the biodiversity and habitat of the protected area. Final notification for Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary was published by MoEFCC.

At State level, Evaluation Committee is constituted in which competent officers from different government departments are members. After the Monitoring Committee meeting/Stakeholders meeting, Evaluation Committee meetings were done for both the stages. Comments from the members were also incorporated in the reports. Updated Draft Zonal Master Plan report was submitted by the consultant to MPTB after incorporation of comments from the final evaluation committee meeting.

Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you chapters attached to this mail on "Section for Infrastructure and Section for Traffic and Transportation" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

Lily Trade Wing 6th Floor, Jehangirabad, Bhopal (M.P.) - 462008
Tel : + 91 755-2780600, www.mptourism.com/www.tourism.mp.gov.in

The project has a stringent timeline; therefore, I request you to send your valuable inputs/ comments /suggestions to MPTB within 10 days, on receiving this letter. If no inputs /comments/ suggestions are received from your department within 10 days, the chapter will be considered approved from your end and MPTB will proceed with the finalization of Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.


Managing Director and
Principal Secretary (Tourism)

Dated...../...../2021

No...../PLG/MPTB/2021

Copy to :

1. Chief Executive Officer, Madhya Pradesh Rural Road Development Authority,
Bhopal (M.P.)

—
Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No...../PLG/MPTB/2021

Dated...../...../2021

To,
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Panchayat & Rural Development Department
Government of Madhya Pradesh

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Lily Trade Wing 6th Floor, Jehangirabad, Bhopal (M.P.) - 462008
Tel : + 91 755-2780600, www.mptourism.com/www.tourism.mp.gov.in

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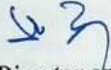
Managing Director and
Principal Secretary (Tourism)

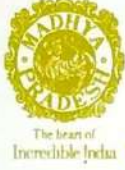
No. 32.07.../PLG/MPTB/2021

Dated. 31.10.21/2021

Copy to :

1. Chief Executive Officer, Madhya Pradesh Rural Road Development Authority,
Bhopal (M.P.)


Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No...../PLG/MPTB/2021

Dated...../...../2021

To,
The Divisional Commissioner
Hoshangabad.
Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Infrastructure" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you a chapter attached to this mail on "Section for Infrastructure" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

Lily Trade Wing 6th Floor, Jehangirabad, Bhopal (M.P.) - 462008
Tel : + 91 755-2780600, www.mptourism.com/www.tourism.mp.gov.in

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Managing Director and
Principal Secretary (Tourism)

No. ~~32.9.9~~.../PLG/MPTB/2021

Dated ~~31.1.20~~ 25/2021

Copy to :

1. PCCF (Wildlife), Department of Forest, Govt. of M.P., Bhopal (M.P.)


Managing Director and
Principal Secretary (Tourism)

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मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 3208.../PLG/MPTB/2021

Dated 31.12.2021

To,
The Divisional Commissioner
Hoshangabad.
Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Infrastructure" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

In the said Gazette notifications, Govt. of M.P. was given responsibility to prepare Zonal Master Plan of Eco-Sensitive Zone of notified National Parks and Sanctuaries within a period of 2 years from the date of publication of notification in the official Gazette. Therefore, Madhya Pradesh Tourism Board has taken the initiative to prepare the Zonal Master Plans of Eco-Sensitive Zone. In the notification, Govt. Departments are mentioned as stakeholders and in consultation with these departments, Zonal Master Plans shall be prepared.


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Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you a chapter attached to this mail on "Section for Infrastructure" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

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Managing Director and
Principal Secretary (Tourism)

Dated...../...../2021

No...../PLG/MPTB/2021

Copy to :

1. PCCF (Wildlife), Department of Forest, Govt. of M.P., Bhopal (M.P.)

Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 3205/PLG/MPTB/2021

Dated 31/05/2021

To,
The Principal Secretary
Public Works Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapters "Section for Infrastructure and Section for Traffic and Transportation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

In the said Gazette notifications, Govt. of M.P. was given responsibility to prepare Zonal Master Plan of Eco-Sensitive Zone of notified National Parks and Sanctuaries within a period of 2 years from the date of publication of notification in the official Gazette. Therefore, Madhya Pradesh Tourism Board has taken the initiative to prepare the Zonal Master Plans of Eco-Sensitive Zone. In the notification, Govt. Departments are mentioned as stakeholders and in consultation with these departments, Zonal Master Plans shall be prepared.

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Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you chapters attached to this mail on "Section for Infrastructure and Section for Traffic and Transportation" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

Dated 31.12.2021

No. 3284.../PLG/MPTB/2021

To,
The Principal Secretary
Urban Development and Housing
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Infrastructure" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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**Managing Director and
Principal Secretary (Tourism)**

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Madhya Pradesh Tourism Board

No. 3198.../PLG/MPTB/2021

Dated 31/12/2021

To,
Additional Chief Secretary
Water Resource Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Conservation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 32.92./PLG/MPTB/2021

Dated. 31.10.2021

To,
Superintendent Archeologist
Archeological Survey of India
Jabalpur Circle (M.P.)

Sub:- For providing inputs/suggestions in the chapter "Section for Conservation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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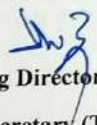
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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. ~~3203~~.../PLG/MPTB/2021

Dated..31.12.2021

To,
The Commissioner,
Department of Archaeology Archives and Museums
Govt. of M.P.
Bhopal (M.P.)

Sub:- For providing inputs/suggestions in the chapter "Section for Conservation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No...../PLG/MPTB/2021

Dated...../...../2021

To,
Principle Secretary
Environment Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Conservation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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Managing Director and
Principal Secretary (Tourism)

No. 3201/PLG/MPTB/2021

Dated.../.../2021

Copy to :

1. Director (Environment), Madhya Pradesh Pollution Control Board, Government of M.P., Bhopal (M.P.)


Managing Director and
Principal Secretary (Tourism)

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Madhya Pradesh Tourism Board

No. 3199.../PLG/MPTB/2021

Dated 31.../05/2021

To,
PCCF (Wildlife)
Department of Forest
Govt. of M.P.
Bhopal (M.P.)

Sub:- For providing inputs/suggestions in the chapters "Section for Conservation and Section for Proposed Landuse Landcover" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 3200/PLG/MPTB/2021

Dated 31/12/2021

To,
Principle Secretary
Environment Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Conservation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

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Managing Director and
Principal Secretary (Tourism)

Dated.../.../2021

No...../PLG/MPTB/2021

Copy to :

1. Director (Environment), Madhya Pradesh Pollution Control Board, Government of
M.P., Bhopal (M.P.)


Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 3186/PLG/MPTB/2021

Dated 31.10.2021

To,
Divisional Commissioner
Hoshangabad.
Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Traffic and Transportation" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

In the said Gazette notifications, Govt. of M.P. was given responsibility to prepare Zonal Master Plan of Eco-Sensitive Zone of notified National Parks and Sanctuaries within a period of 2 years from the date of publication of notification in the official Gazette. Therefore, Madhya Pradesh Tourism Board has taken the initiative to prepare the Zonal Master Plans of Eco-Sensitive Zone. In the notification, Govt. Departments are mentioned as stakeholders and in consultation with these departments, Zonal Master Plans shall be prepared.

Under the umbrella of Zonal Master Plan for Eco-Sensitive Zones, initiative of Madhya Pradesh Government and the guidelines of Ministry of Environment, Forest and Climate Change (MoEFCC), protected area of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, is taken by consultant M/s. SAI Consultant Engineers Pvt. Ltd. to prepare Zonal Master Plan for its Eco-Sensitive Zone with an objective to protect the biodiversity and habitat of the protected area. Final notification for Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary was published by MoEFCC.

At State level, Evaluation Committee is constituted in which competent officers from different government departments are members. After the Monitoring Committee meeting/Stakeholders meeting, Evaluation Committee meetings were done for both the stages. Comments from the members were also incorporated in the reports. Updated Draft Zonal Master Plan report was submitted by the consultant to MPTB after incorporation of comments from the final evaluation committee meeting.

Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you a chapter attached to this mail on "Section for Traffic and Transportation" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

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Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No...../PLG/MPTB/2021

Dated...../...../2021

To,
The Principal Secretary
Urban Development and Housing
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Proposed Landuse Landcover" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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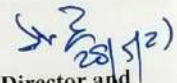
Managing Director and
Principal Secretary (Tourism)

Dated 31/05/2021

No. 3128.../PLG/MPTB/2021

Copy to :

1. Commissioner, Town and Country Planning, Govt. of M.P., Bhopal (M.P.)


Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 3189/PLG/MPTB/2021

Dated 31/05/2021

To,
The Collector,
Dist. Hoshangabad,
Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Proposed Landuse Landcover" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

In the said Gazette notifications, Govt. of M.P. was given responsibility to prepare Zonal Master Plan of Eco-Sensitive Zone of notified National Parks and Sanctuaries within a period of 2 years from the date of publication of notification in the official Gazette. Therefore, Madhya Pradesh Tourism Board has taken the initiative to prepare the Zonal Master Plans of Eco-Sensitive Zone. In the notification, Govt. Departments are mentioned as stakeholders and in consultation with these departments, Zonal Master Plans shall be prepared.

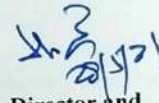
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Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you a chapter attached to this mail on "Section for Proposed Landuse Landcover" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 31.87.../PLG/MPTB/2021

Dated 31.05/2021

To,
The Principal Secretary
Urban Development and Housing
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Proposed Landuse Landcover" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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→ 3
28/5/21

Managing Director and

Principal Secretary (Tourism)

No...../PLG/MPTB/2021

Dated.../.../2021

Copy to :

1. Commissioner, Town and Country Planning, Govt. of M.P., Bhopal (M.P.)

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Managing Director and

Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 3190.../PLG/MPTB/2021

Dated 31.05/2021

To,
Chief Executive Officer
Madhya Pradesh Ecotourism Development Board
Bhopal (M.P.)

Sub:- For providing inputs/suggestions in the chapter "Section for Tourism" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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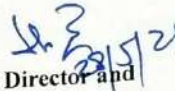
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Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 3191.../PLG/MPTB/2021

Dated. 31.../05/2021

To,
Managing Director
Madhya Pradesh State Tourism Development Corporation,
Bhopal (M.P.)

Sub:- For providing inputs/suggestions in the chapter "Section for Tourism" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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Managing Director and

Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 3212/PLG/MPTB/2021

Dated 31.10.2021

To,
Additional Chief Secretary
Panchayat & Rural Development Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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Managing Director and
Principal Secretary (Tourism)

The heart of
Incredible India

मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No...../PLG/MPTB/2021

Dated...../...../2021

To,
The Principal Secretary
Department of Agriculture
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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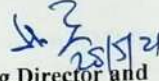
Managing Director and
Principal Secretary (Tourism)

Dated 31.05.2021

No. 3193/PLG/MPTB/2021

Copy to :

1. Director, Farmer Welfare and Agriculture Department, Government of Madhya Pradesh, Bhopal (M.P.)


Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड

Madhya Pradesh Tourism Board

No. 3195.../PLG/MPTB/2021

Dated. 31.05/2021

To,
The Chief Executive Officer
State Rural Livelihoods Mission
Bhopal (M.P.)

Sub:- For providing inputs/suggestions in the chapter "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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Lily Trade Wing 6th Floor, Jehangirabad, Bhopal (M.P.) - 462008
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**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 3212.../PLG/MPTB/2021

Dated 3.1.25/2021

To,
The Director
Horticulture and Animal Husbandry
Govt. of Madhya Pradesh, Bhopal

Sub:- For providing inputs/suggestions in the chapter "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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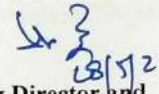
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Lily Trade Wing 6th Floor, Jehangirabad, Bhopal (M.P.) - 462008
☎ : + 91 755-2780600, www.mptourism.com/www.tourism.mp.gov.in

The project has a stringent timeline; therefore, I request you to send your valuable inputs/ comments /suggestions to MPTB within 10 days, on receiving this letter. If no inputs /comments/ suggestions are received from your department within 10 days, the chapter will be considered approved from your end and MPTB will proceed with the finalization of Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.



**Managing Director and
Principal Secretary (Tourism)**



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 31927/PLG/MPTB/2021

Dated 21.11.2021

To,
The Principal Secretary
Department of Agriculture
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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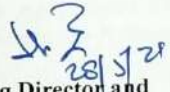
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Managing Director and

Principal Secretary (Tourism)

No...../PLG/MPTB/2021

Dated...../...../2021

Copy to :

1. Director, Farmer Welfare and Agriculture Department, Government of Madhya Pradesh, Bhopal (M.P.)

Managing Director and
Principal Secretary (Tourism)



मध्यप्रदेश टूरिज़्म बोर्ड Madhya Pradesh Tourism Board

No. 3194.../PLG/MPTB/2021

Dated. 31.../05/2021

To,
The Secretary,
Micro, Small and Medium Enterprises Department
Government of Madhya Pradesh

Sub:- For providing inputs/suggestions in the chapter "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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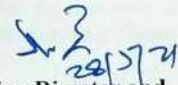
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Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, MPTB is sending you a chapter attached to this mail on "Section for Agriculture and Livelihood" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary relevant to your department so that valuable inputs are incorporated in the Final Zonal Master Plan.

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The project has a stringent timeline; therefore, I request you to send your valuable inputs/ comments /suggestions to MPTB within 10 days, on receiving this letter. If no inputs /comments/ suggestions are received from your department within 10 days, the chapter will be considered approved from your end and MPTB will proceed with the finalization of Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.



Managing Director and

Principal Secretary (Tourism)

Sub:- For providing inputs/suggestions in the chapter “Section for Tourism” from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

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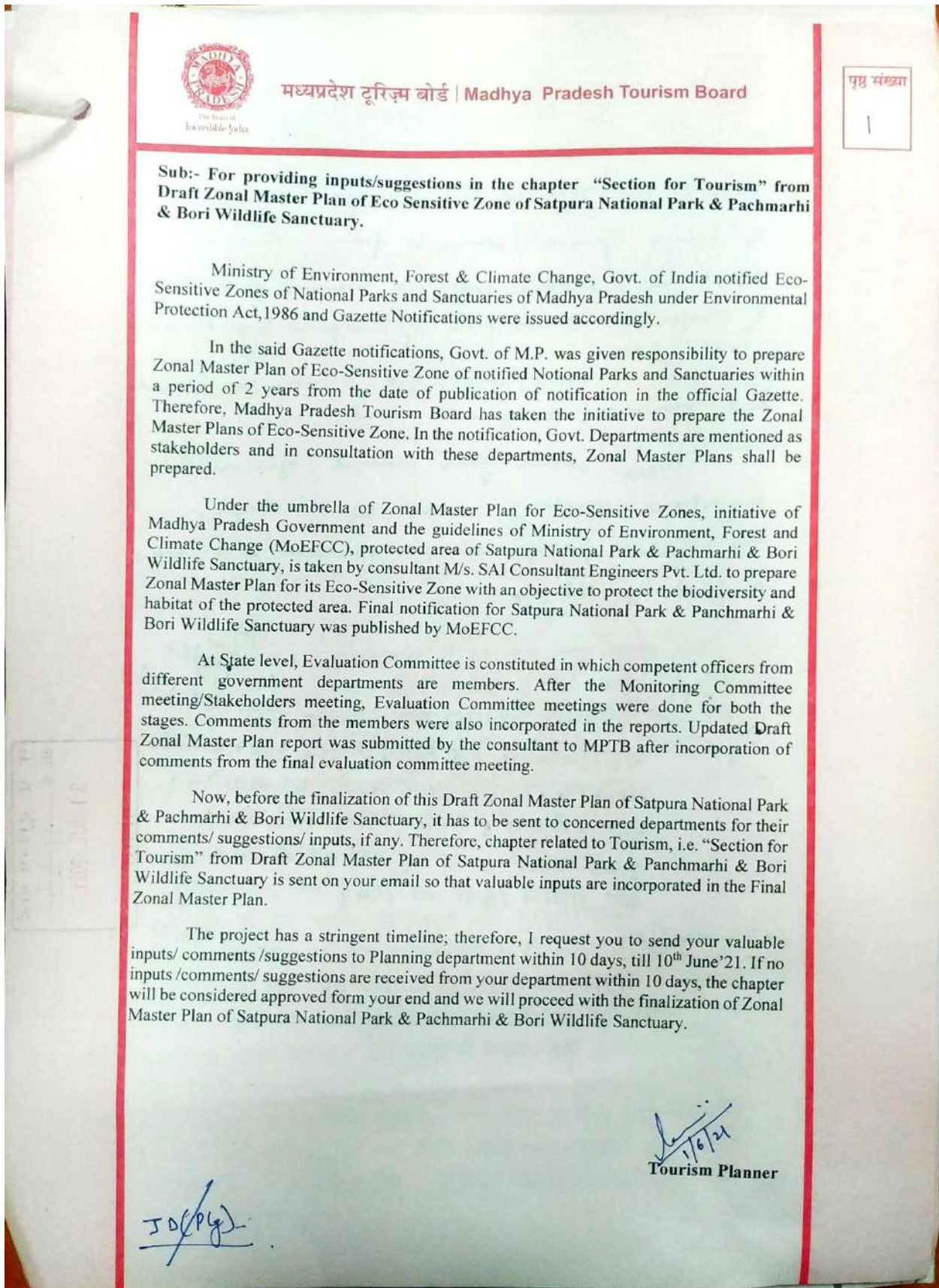
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Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, chapter related to Tourism, i.e. “Section for Tourism” from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary is sent on your email so that valuable inputs are incorporated in the Final Zonal Master Plan.

The project has a stringent timeline; therefore, I request you to send your valuable inputs/ comments /suggestions to Planning department within 10 days, till 10th June’21. If no inputs /comments/ suggestions are received from your department within 10 days, the chapter will be considered approved from your end and we will proceed with the finalization of Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Tourism Planner

Annexure 17.4 : Comments received from various departments





मध्यप्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board
Subj. for Providing inputs/suggestions

पृष्ठ संख्या
2

11/5 - 322/2021
दिनांक - 01/06/2021

Refer to N.S. page no.35,36,37 regarding approval of taking opinion / comments from concerned department / sections regarding relevant part / chapter of draft ESZ Master plan of Satpura Tiger Reserve.

The relevant section for Tourism has already been forwarded to you on mail.

Please submit your comment / opinion or suggestions regarding content of the chapter. The timeline for providing suggestions is 10 days as fixed by MD sir.

11/6/21
IPB

322/ IP

सतपुरा नेशनल पार्क अन्तर्गत इको सेंसिटिव जोन हेतु तैयार ड्राफ्ट मास्टर प्लान अन्तर्गत सम्मिलित ग्रामों आदि स्थलों का अवलोकन कर अभिमत होने हेतु प्रेषित, ताकि उक्त ड्राफ्ट मास्टर प्लान पर अभिमत योजना शाला को प्रेषित किया जा सके।

उपसंचालक [IP]

3/6/21

म. प्र. टूरिज्म बोर्ड
आ. क्र. 1032
01 JUL 2021



मध्यप्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board

पुस्तक संख्या

विषय:-सतपुड़ा नेशनल पार्क अंतर्गत ईको- सेंसिटिव जोन हेतु मास्टर प्लान के संबंध में ।

संदर्भ:-आपका ईमेल दिनांक 01/06/2021 ।

सतपुड़ा नेशनल पार्क अंतर्गत ईको सेंसिटिव जोन हेतु तैयार ड्राफ्ट मास्टर प्लान का गहन एवं विस्तारित अध्ययन किया गया । अध्ययन उपरान्त इसमें निम्नलिखित तथ्यों को ड्राफ्ट मास्टर प्लान की कण्डिका 1.1.3 SWOT Analysis में जोड़ा जाना आवश्यक है ।

Strength	Opportunity	Weakness	Local People Specially Tribues
(1)	(2)	(3)	(4)
Water body Along with Wildlife	River Crouse along with wildlife	No required system to allow tourism in Tawa reservoir by the state departments.	May visited opening up their wildlife

कण्डिका 2.4.1 वाईल्डलाईफ टूरिज्म जोन मढ़ई क्लस्टर अंतर्गत सारंगपुर ग्राम में टूरिज्म विभाग द्वारा रिसोर्ट निर्माण हेतु निजी निवेशक को भूमि आवंटित की गई है । अतः उक्त ग्राम को भी रिसोर्ट केटेगरी में लिया जाना चाहिए । इस क्लस्टर को वॉटर टूरिज्म एवं क्रूज टूरिज्म के लिए भी आरक्षित किया जाना चाहिए। क्योंकि देनवा नदी से तवा बांध में क्रूज/वॉटर टूरिज्म फलीभूत हो सकता है।

कण्डिका 2.4.3 अंतर्गत डोकरीखेड़ा ग्राम में पर्यटन विभाग की भूमि उपलब्ध है, यहाँ भविष्य में निजी निवेशक को रिसोर्ट आदि पर्यटन परियोजना की स्थापना हेतु भूमि आवंटित किया जाना है ।

बोरी सेन्चुरी अंतर्गत धपाड़ामाल और गुरगुन्दा ग्रामों का उल्लेख मास्टर प्लान में अवलोकित नहीं हुआ है, इन गांवों में भी Accommodation जैसी पर्यटन गतिविधियों के लिए जोड़ा जाना चाहिए । इसी तरह मटकुली के आसपास चाकर, कठोतिया, छिरई जैसे ग्रामों को भी Accommodation जैसी पर्यटन गतिविधियों के लिए जोड़ा जाना चाहिए । इन ग्रामों में रिसोर्ट जैसी गतिविधियों के लिए भूमि पर्यटन विभाग को आवंटित हुई है ।

पचमढी के आसपास चौरागढ़, राजेन्द्रगिरी, धूपगढ़ तथा छोटा-बड़ा महादेव क्षेत्र में रोप-वे अथवा केवल कार जैसी गतिविधियों को जोड़ा जाना चाहिए । इसी तरह पचमढी के आस-पास हॉट एयर वैलून, सी-प्लेन/हेलीकॉप्टर टूरिज्म को भी जोड़ा जाना चाहिए ।

निरंतर.....



मध्यप्रदेश टूरिज़्म बोर्ड | Madhya Pradesh Tourism Board

पृष्ठ संख्या

विषय:-सतपुड़ा नेशनल पार्क अंतर्गत ईको- सेंसिटिव जोन हेतु मास्टर प्लान के संबंध में ।

पूर्व पृष्ठ से.....

वस्तुतः मास्टर प्लान में जितने भी टूरिज़्म जोन बनाए जा रहे हैं उन सभी जोन में एक प्रावधान "टूरिज़्म पॉलिसी में परिभाषित/वर्णित पर्यटन परियोजना के लिए आरक्षित" जोड़ा जाना चाहिए ताकि भविष्य के लिए निवेश एवं अधोसंरचनात्मक विकास की सम्भावना बनी रहे ।

283
16/6/2216/6/22
उप संचालक (नि.सं.)

संयुक्त संचालक (प्लानिंग)

16/6/22

R-Plan

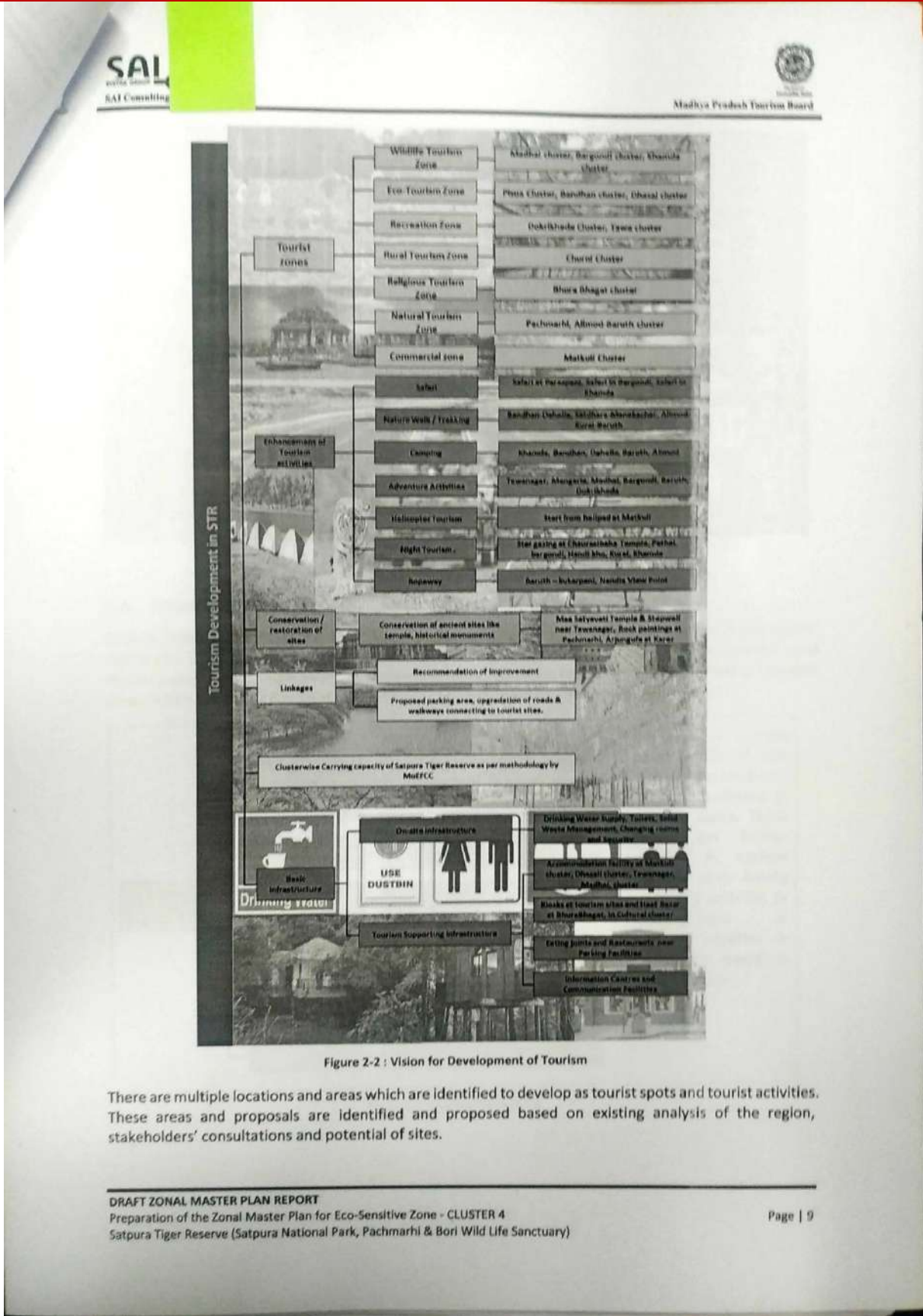


Figure 2-2 : Vision for Development of Tourism

There are multiple locations and areas which are identified to develop as tourist spots and tourist activities. These areas and proposals are identified and proposed based on existing analysis of the region, stakeholders' consultations and potential of sites.

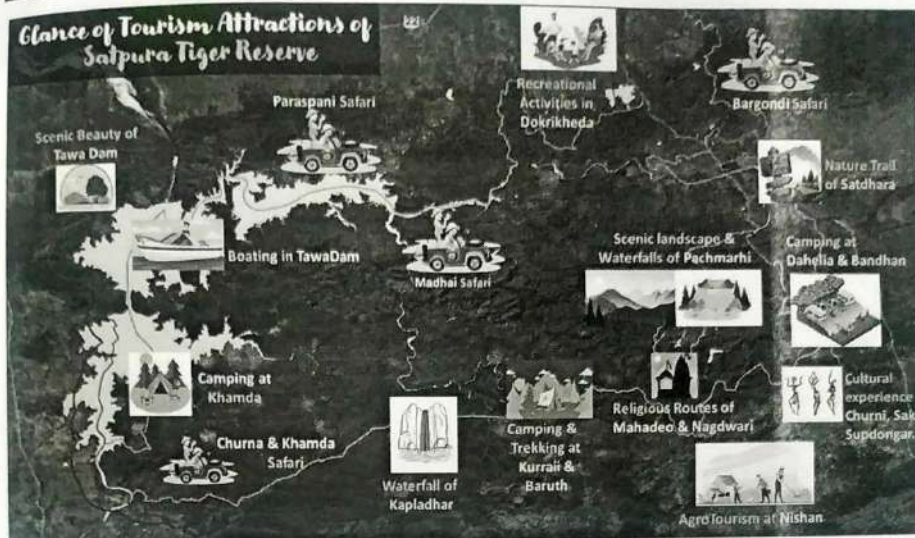


Figure 2-3 : Glance of Tourism Attractions of Satpura Tiger Reserve

2.4 TOURIST ZONES

Satpura Tiger Reserve has the flourishing tourism and many potential sites to develop as unexplored tourist site. These tourist sites are briefly discussed in Baseline Assessment Report for Eco-sensitive zonal master plan of Satpura Tiger Reserve. Region of Satpura Tiger Reserve can be classified further in 7 tourism zones which are briefly discussed in Chapter -3. Tourism zones can briefly identify as below:



Figure 2-4 : Tourist zones in ESZ

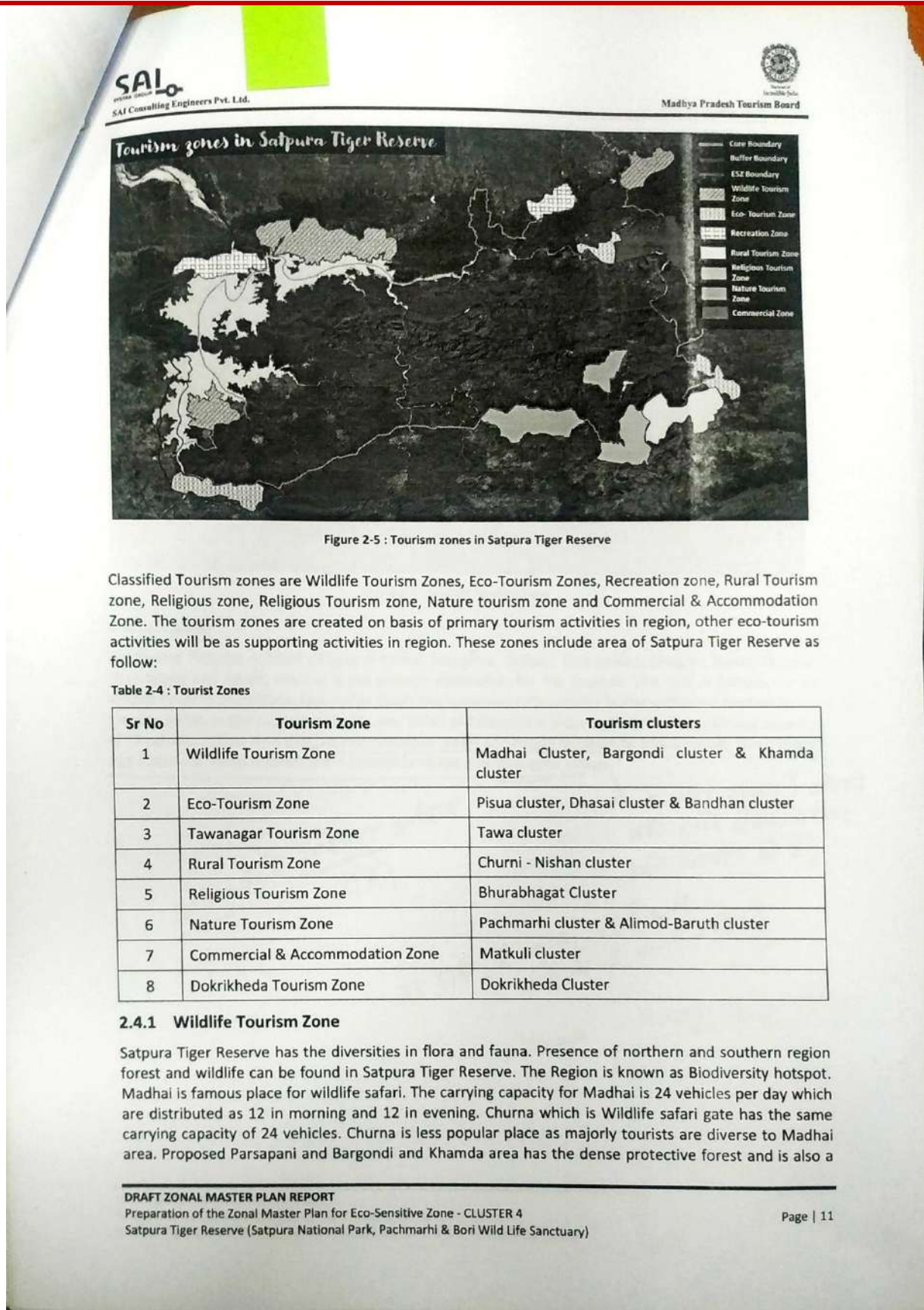


Figure 2-5 : Tourism zones in Satpura Tiger Reserve

Classified Tourism zones are Wildlife Tourism Zones, Eco-Tourism Zones, Recreation zone, Rural Tourism zone, Religious zone, Religious Tourism zone, Nature tourism zone and Commercial & Accommodation Zone. The tourism zones are created on basis of primary tourism activities in region, other eco-tourism activities will be as supporting activities in region. These zones include area of Satpura Tiger Reserve as follow:

Table 2-4 : Tourist Zones

Sr No	Tourism Zone	Tourism clusters
1	Wildlife Tourism Zone	Madhai Cluster, Bargondi cluster & Khamda cluster
2	Eco-Tourism Zone	Pisua cluster, Dhasai cluster & Bandhan cluster
3	Tawanagar Tourism Zone	Tawa cluster
4	Rural Tourism Zone	Churni - Nishan cluster
5	Religious Tourism Zone	Bhurabhagat Cluster
6	Nature Tourism Zone	Pachmarhi cluster & Alimod-Baruth cluster
7	Commercial & Accommodation Zone	Matkuli cluster
8	Dokrikheda Tourism Zone	Dokrikheda Cluster

2.4.1 Wildlife Tourism Zone

Satpura Tiger Reserve has the diversities in flora and fauna. Presence of northern and southern region forest and wildlife can be found in Satpura Tiger Reserve. The Region is known as Biodiversity hotspot. Madhai is famous place for wildlife safari. The carrying capacity for Madhai is 24 vehicles per day which are distributed as 12 in morning and 12 in evening. Churna which is Wildlife safari gate has the same carrying capacity of 24 vehicles. Churna is less popular place as majorly tourists are diverse to Madhai area. Proposed Parsapani and Bargondi and Khamda area has the dense protective forest and is also a

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

habitat to wild animals in the area. Khamda Safari can be linked with Churna Safari and a single day Safari can be Organized.

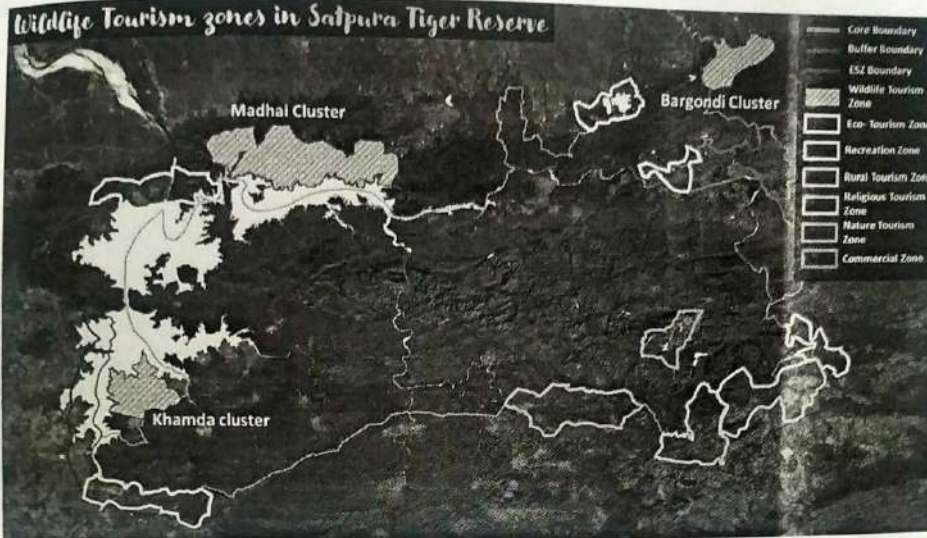


Figure 2-6 : Wildlife Tourism Zone

Madhai Cluster

The cluster includes notified villages of Pathai, Mangaria, Urdaon, Kharpawad, Ghoghri, Kamti, Tekapar, Chaurmarhi and Sehra. Madhai is the popular destination for the tourism. The spot is famous for its wildlife tourism and safaris. Jamanidev Safari and Parsapani safari are for buffer safari and Madhai Safari for core safari. In the cluster, route for new Safari of Parsapani is proposed with having carrying capacity of 13 vehicles. Other than that, an interpretation center and nature museum to aware people about forest and history of forest is proposed in Mangaria village and Sarangpur village.

शाम्भू इलाके में सारंगपुर शामिल नहीं है।

के लवाडा गलत है क्योंकि वहाँ एमए रिजर्व के लिए अभी आन्वित की है।

वेग ग्रामों - में नामक हिरेई और जंगल को भी जोड़ना चाहिए।

~~Water~~ पचपान माल रिया
Water Tourism Zones
(कुस-वाल्
सिपीलम)

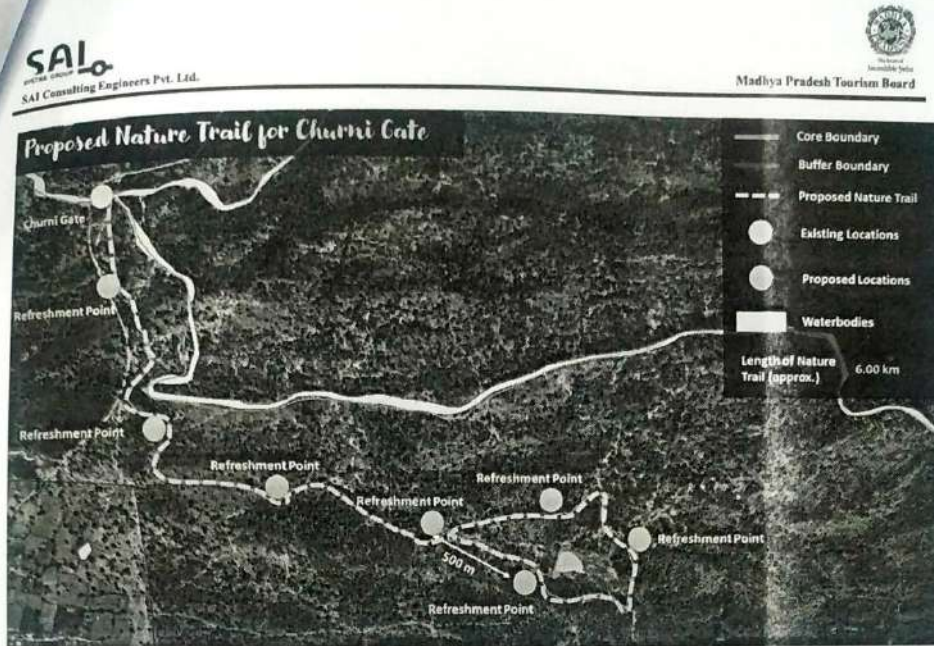


Figure 2-11 : Proposed nature walk in Dhasai Cluster

Table 2-9 : Proposed activities in Dhasai cluster

Sr No	Proposed Activity	Tentative Area (m ²) / length (km)
1	Wildlife Safari - Khamda	30.00 km
2	Nature Trail – Churni Gate	6 km

Pisua Cluster

Pisua cluster is surrounded by core boundaries. Presence of wild animals are often observed in the cluster. As the conservation is prime for the area only camping is proposed in cluster. The vehicles and nature trail routes are nearby from the cluster which strengthens the connectivity with core. The cluster can be further developed as major entrance point to core area of STR.

Table 2-10 : Proposed activities for Pisua cluster

Sr No	Proposed Activity	Tentative Area (m ²) / length (km)
1	ET2 - Pisua	206882.38 m ²
2	ET2 – Mehandikheda	856169.89 m ²

2.4.3 Tourism Activity Zone

With having beautiful natural sceneries, places like Dokrikheda and Tawanagar are suitable place for the recreational activities. Dokrikheda dam is proposed for multiple recreational activities like boating, floating market, Parks and picnic points, flower garden and many more. Tawanagar has advantage of Tawa dam and can be developed as recreational and peaceful accommodation with having multiple activities in surrounding. The place has potential to be developed as weekend destination.

डोकरीखेडा में हमारी Land

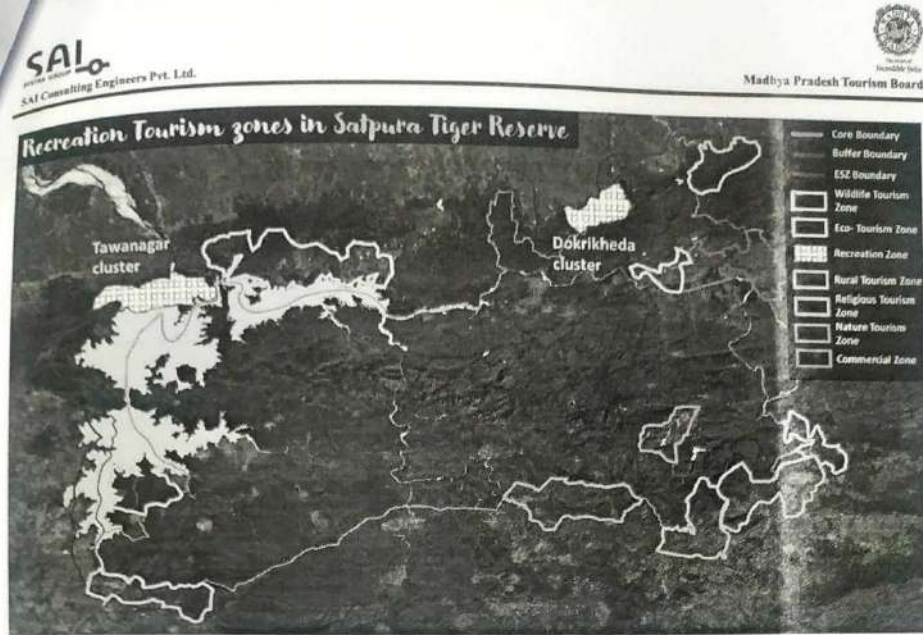


Figure 2-12 : Proposed Recreational tourism activity zones

Ranipur – Tawanagar Cluster

Ranipur-Tawanagar is an urban center of Satpura Tiger Reserve situated at Tawa Reservoir. The recreation and economic activities in Tawa dam is ban as it is part of the protected area. From Tawanagar, a beautiful view for the Reservoir with landscape of Satpura. The chaurasi baba temple is proposed viewing point as it has view of whole Tawa reservoir and forest with beautiful landscape of Satpura hills. At Dam side, Flower Park and Garden with picnic point and Camping is proposed for recreational purpose. The viewing points are proposed in the park and garden area for experiencing scenic beauty of landscape of STR.



Figure 2-13 : Proposed activities in Ranipur-Tawanagar cluster

Table 2-11 : Proposed activities in Ranipur-Tawangar cluster

Sr No	Proposed Activity	Tentative Area (m ²) / length (km)
1	Nature Trail – Tawanagar to Chaurasi Baba	3.00 km
2	Boating in Tawa River	1.00 km
3	Adventure Zone	2,47,746 m ²
3	Accommodation	1,88,670 m ²
4	Flower Park, Garden and Picnic Points	13,085 m ²
5	Camping	5308 m ²
6	Commercial	23,871 m ²

Dokrikheda Cluster

Dokrikheda is a courtyard of Satpura Tiger Reserve located 13 km from Pipariya and Matkuli on SH 19. A nice scenic beauty for satpura can be experienced from the dam site of Dokrikheda. The region has the potential for recreation development. The cluster also includes religious place of Anhoni hot spring water nearby. Proposal for Park & Gardens, Audio & Video Museum with interpretation center, Flower Park, Monument park or culture park & Camping site is proposed on shore of the Dokrikheda dam. A sericulture seed production center is located at nearby area of Dokrikheda. The center is proposed to develop as an sericulture experience center and exhibition of silk products. Proposal for parks and camping is provided at Choka, southern side of dam site.

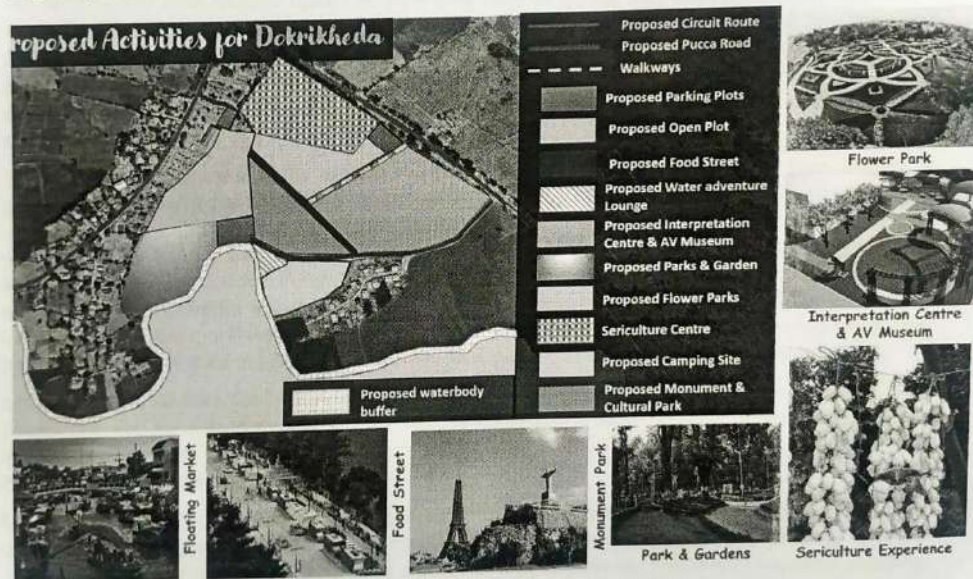


Figure 2-14 : Proposed activities in Dokrikheda cluster

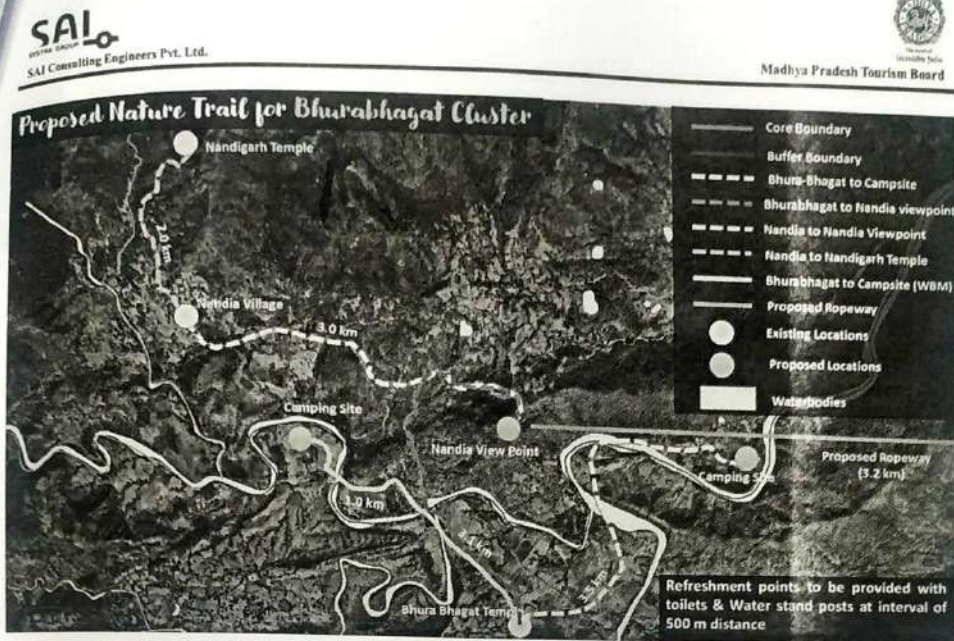


Figure 2-18 : Religious Tourism Zone

Table 2-14 : The proposed activities are as below table:

Sr No	Proposed Activity	Tentative Area (m ²) / length (km)
1	Nature Trail – Bhurabhagat to Nandia Viewpoint	3.1 km
2	Nature Trail – Bhurabhagat to Campsite	3.5 km
3	Nature Trail – Nandia viewpoint to Nandia village	3.0 km
4	Nature Trail – Nandia village to Nandiagarh temple	2.0 km
5	Ropeway	3.2 km
6	Campsite 1	2,34,540.41 m ²
7	Campsite 2	8,59,006.83 m ²

Table 2-15 : The proposed activities are as below table:

Sr No	Proposed Activity	Tentative Area (m ²) / length (km)
1	Nature Trail – Alimod to Rorighat Darshan	5.1 km
2	Nature Trail – Alimod to Kurraii	4.6 km
3	Nature Trail – Alimod to Jamndip	2.5 km
4	Campsite - Kurrai	5,73,718.85 m ²
5	Naturopathy Centre and Resorts - Alimod	m ²

Baruth is proposed with adventure zone and camping sites in the area. Baruth has the most significant location for camping as it is surrounded by mountains and river streams from all sides. A ropeway from Baruth to Kukarpani is also proposed to enjoy the mesmerizing landscape of southern STR.

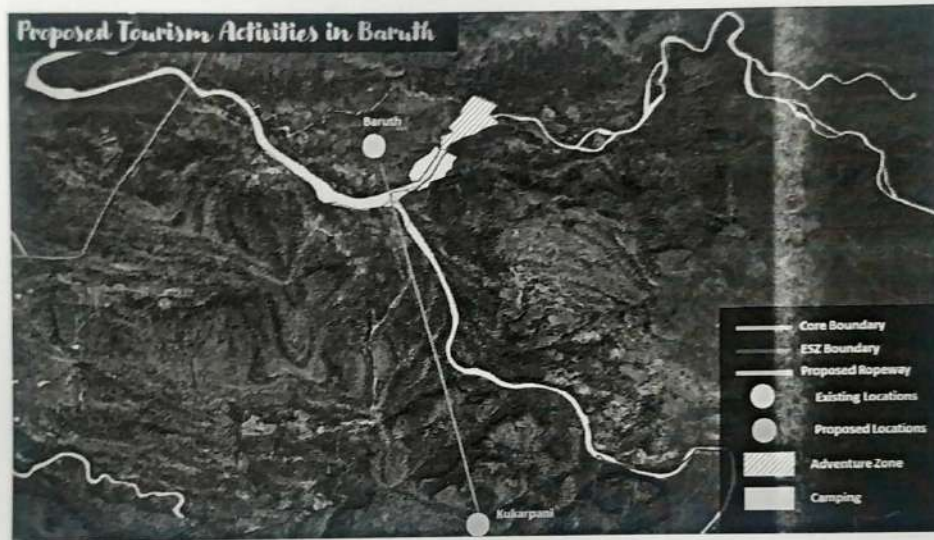


Figure 2-21 : Proposed Ropeway in Baruth

Table 2-16 : The proposed activities are as below table:

Sr No	Proposed Activity	Tentative Area (m ²) / length (km)
1	Ropeway: Baruth to Kukarpani	5.1 km
2	Camping site - Baruth	80549.58 m ²
3	Water Adventure Zone	35,869 m ²
4	Adventure Zone	56,978 m ²

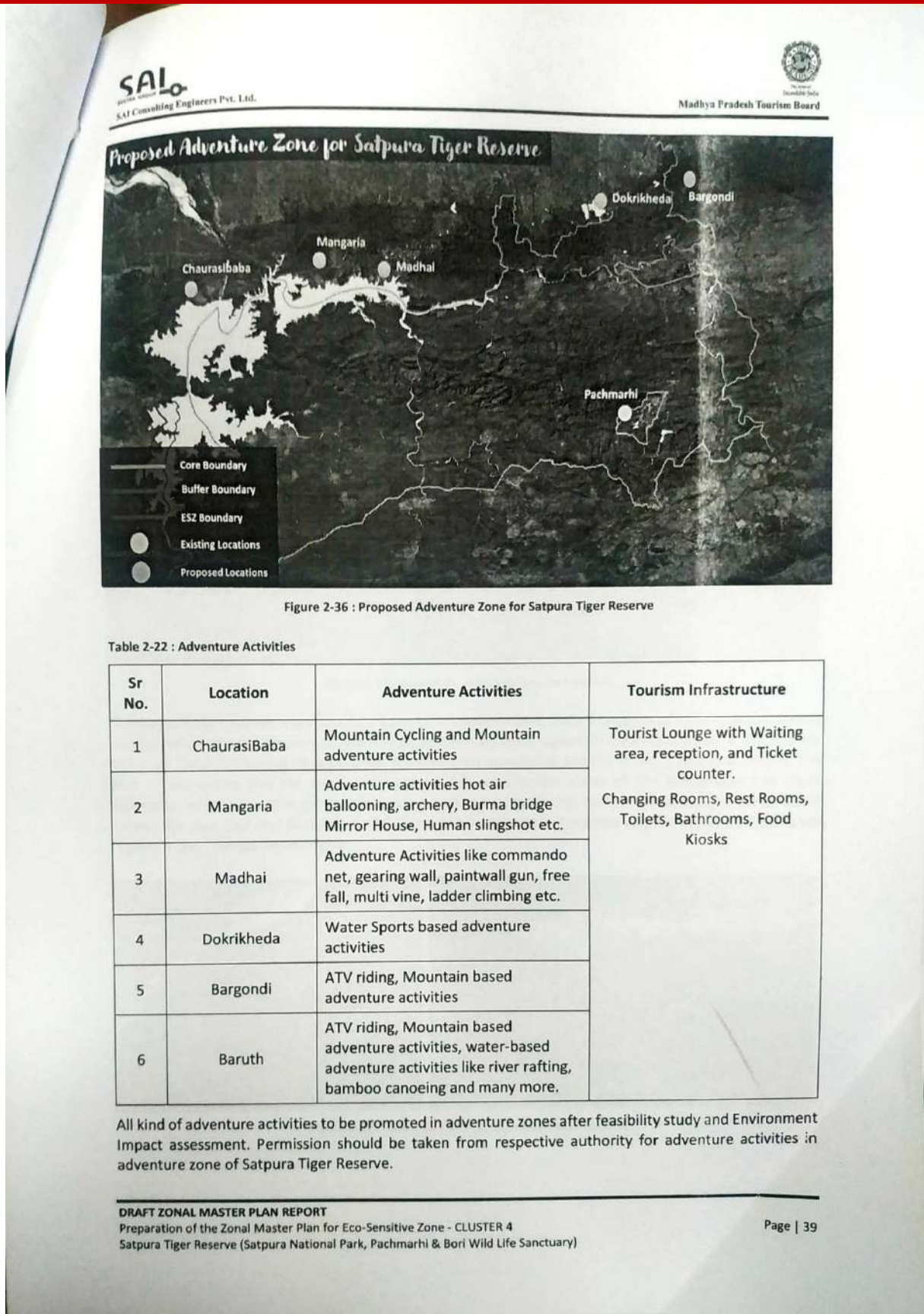


Figure 2-36 : Proposed Adventure Zone for Satpura Tiger Reserve

Table 2-22 : Adventure Activities

Sr No.	Location	Adventure Activities	Tourism Infrastructure
1	Chaurasi Baba	Mountain Cycling and Mountain adventure activities	Tourist Lounge with Waiting area, reception, and Ticket counter. Changing Rooms, Rest Rooms, Toilets, Bathrooms, Food Kiosks
2	Mangaria	Adventure activities hot air ballooning, archery, Burma bridge Mirror House, Human slingshot etc.	
3	Madhai	Adventure Activities like commando net, gearing wall, paintwall gun, free fall, multi vine, ladder climbing etc.	
4	Dokrikheda	Water Sports based adventure activities	
5	Bargondi	ATV riding, Mountain based adventure activities	
6	Baruth	ATV riding, Mountain based adventure activities, water-based adventure activities like river rafting, bamboo canoeing and many more.	

All kind of adventure activities to be promoted in adventure zones after feasibility study and Environment Impact assessment. Permission should be taken from respective authority for adventure activities in adventure zone of Satpura Tiger Reserve.

DRAFT ZONAL MASTER PLAN REPORT

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

**OFFICE THE PRINCIPAL CHIEF CONSERVATOR OF FOREST (WILDLIFE)
& CHIEF WILDLIFE WARDEN, MADHYA PRADESH**
PRAGATI BHAWAN, M.P. NAGAR, BHOPAL, MADHYA PRADESH-462011
PHONE: 0755-2674318, 2674337 FAX: 0755-2766315 E-Mail pccfwj@mp.gov.in

No./ ५१०२१०/ ५०८०

Bhopal, Dated : 16.6.2021

To,

The Managing Director and
Principal Secretary (Tourism)
Madhya Pradesh Tourism Board,
Jahagirabad, Bhopal.

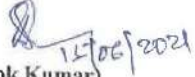
**Sub.:- For providing inputs/suggestions on draft Zonal Master Plan of Satpura
Tiger Reserve- regarding.**

Ref. :- Your letter no. 3199/PLG/MPTB/2021, dated 31.05.2021.

Sir,

Reference is invited to the subject and correspondence cited above. In this context, the inputs/suggestions requested are hereby enclosed for necessary action from your end. The inputs provided are received from the Field Director, Satpura Tiger Reserve after due diligence and detailed discussions on the subject matter with concerned officials.

Ends: As above.


(Alok Kumar)
PCCF (WL) & CWLW
Madhya Pradesh, Bhopal

Suggestions/inputs on Draft Zonal Master Plan of Eco-Sensitive Zone of Satpura National Park, Pachmarhi & Bori Wildlife Sanctuaries

Chapter : Tourism

The following points may be considered to include in the tourism chapter to streamline tourism activities in the Eco-Sensitive Zone of Satpura National Park/Bori Wildlife Sanctuary/Pachmarhi Wildlife Sanctuary.

1. **Construction Type & Material:**

With a view to reducing environmental impact of upcoming projects, proposals of ecofriendly structures, such as tents, mud houses, wooden machans and bamboo structures will be given priority. The use of bricks, cement and concrete in commercial projects/ resorts should be reduced to minimum.

2. **Light:**

In all existing/upcoming private properties/ resorts, the following precautions should be taken so that the impact on surrounding wilderness may be minimal and energy conserved:

- Use of external light should be as minimal as possible.
- Use of “white lights” should be avoided and only CFL (yellow light) should be used as minimally as possible.
- Use of focus lamp/halogen lamps in the open areas of the resort is strictly prohibited.

3. **Solar Energy:**

For New Resorts

- Use of solar lighting in common areas and that of solar water heaters in the room will be mandatory.

For Existing Resorts

- Taking into account the existing investment on heating and lighting needs to be replaced with solar energy gradually.

4. **Legitimate Purchase of Fuel-wood:** All lodges/resorts/hotel owners are supposed to make legitimate purchases of fuel-wood for their needs. They are advised to buy fuel-wood from forest depots for their campfires and discourage villagers to resort to illicit felling for easy income.

5. **Rainwater Harvesting:**

All tourism resorts are harvesting water from underground water sources but no infrastructures for harvesting of rainwater for their perpetual needs/demands. It is common that environmental unfriendly practice will lead to depletion of ground water table of the surrounding areas. Every existing and upcoming resort should create reasonable dugouts at low lying areas of the property and undertake roof water harvesting measures.

6. **Fencing:** For all the existing and upcoming resort/private properties:

Y/4

- The existing barbed wire/chain-link fencing/mud-wall should be removed completely at the earliest. The fortification of the hotel/resort campus should be done with live-hedge.
 - Solar fencing is advisable.
 - It is suggested that the height of the live fencing should be around 4ft.
7. **Building Height:**
Upcoming Resort/New Sanction
- The structure of building shall be sanctioned only as ground plus one (G+1).
- Note:** The above provision shall not be applicable to existing resorts/hotels constructed before the constitution of the monitoring committee.
8. **Area Allowed for Construction:**
All the upcoming resorts/hotels sanctioned for construction shall be permitted to a maximum of 5% of the total land area. This provision will not be applicable for the home-stays belonging to indigenous people.
9. **General Restrictions & Conditions:**
- All the DJ music/loud music system above 50 DB (decibels) shall be prohibited. No music systems of any kind shall be permitted post 10:00pm.
 - After 10:00pm all music systems shall remain prohibited in public places falling within Eco-Sensitive Zone as well.
 - Dumping of waste material in open areas shall be strictly prohibited. It is vitally essential for all tourism infrastructures to ensure better management of solid and other wastes. All concerned lodges/hotels/resorts shall be responsible for the classification of biodegradable and non-biodegradable waste and their proper disposal. Untreated effluents from the lodge released out into the open or into any river systems or water body shall be prohibited.
 - All tourism infrastructures need to follow a uniform color code that blend with the natural surroundings.
10. **Provision of Employment Generation for Local Communities :**
- It will be binding on all tourism infrastructures to engage a minimum of 75% local (bonafide residents of Madhya Pradesh) people as their employees.
11. **Promotion of Organic farming :**
All the resort owners are advised to promote organic farming in and around the villages and make arrangements for buyback from the local farmers.
12. The carrying capacity calculated for the tourism zones identified within Eco Sensitive Zone cannot be based on the formula used for calculating carrying capacity of Core Zone of Satpura Tiger Reserve.
13. **Other corrections :**
1. In the section 2.4.1 under Khamda Cluster, a note has to be mentioned that this cluster is the part of Bori Sanctuary.
 2. Under section 2.8 all the carrying capacity should be in terms of vehicle number not number of tourists.

2/4

Chapter : Traffic, Transportation and Infrastructure

14. Under Section 2.3.1 in the table no: 2-1, in the Route 9, Dhasai-Khamda/Dhasai-Bardha/Dhasai-Suplai/Dhasai-Mallupura should be removed from the proposed widening and new roads as these areas are inside the Bori Wildlife sanctuary. And also there is no need for widening or new road as the villages are relocated from the Sanctuary.
15. Under Section 2.4.2 Khamda Zone will be deleted as there is no need for speed breakers in this zone.
16. Under Section 2.4.4 for all the new road repairs and constructions, "Animal Passage Plan" be prepared on the basis of the guidelines named "Eco-friendly Measures to Mitigate Impacts on Linear Infrastructures on Wildlife" by Wildlife Institute of India, Dehradun for Protected Areas, notified ESZ around PAs as per the letter No 6-4/2018 Dated 13-07-2018 Ministry of Environment, Forests and Climate Change, New Delhi. This will be binding on all the User agencies to follow in case of new road construction.
17. Section 2-1. In the table no 2.1 the grand total for the population may be given.
18. In table 2-3, there is no Madhai Zone in the buffer area, so it may be noted as Parsapani and Jamanidehi buffer zones.
19. In the Section 2.4.6 under Solar Power, examples of solar pumps and lights may be taken from relocated villages of STR namely Ghodanar, Bathkachhar, Sakot. For solar electrification many examples like Madai rest house and Patrolling camps of STR may be given so that people could appreciate easily.
20. The text and legends in the maps are not easily readable, appropriate font size and color combination has to be ensured.

Chapter : Conservation

21. Para no 1.1.5: Presently only there are 5 villages (revenue) inside the core of STR instead of 24 villages.
22. Para no 2.2.1 under Encroachment Para, regularization of encroachment on forest land shall be as per "The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 in place of "Indian Forest Act,1927".
23. Para 2.2.3 Under "Animal Passageway" circuit road proposed in STR, which is not required from conservation point of view, which must be removed.

Chapter : proposed Land-use Land-cover and regulation guidelines

24. Para 1.1 Land Cover: Area under each land cover category should be given in Ha and it should be only for the eco-sensitive zone and not for Protected Area.
25. Para 2.3.10 Churni Cluster: Since Churni cluster is inside the Pachmarhi Wildlife Sanctuary, therefore, appropriate mention needs to be made. This zone is not a part of the ESZ.
26. Para 2.3.12 Khamda Cluster: This is part of Bori Wildlife Sanctuary and not a part of the ESZ therefore, should be mentioned accordingly. Since this zone is part of Bori Wildlife Sanctuary and the whole area is forest land, therefore, no need to propose any change in Land-use land-cover as given in the table no: 2-24.
27. Para 2.3.14 Pachmarhi Cluster: Needs to be mentioned that this cluster is part of Pachmarhi Wildlife Sanctuary and Changes proposed in Table 2-28 shall be subject to the Honorable SC and HC orders related to Pachmarhi area.
28. Para 3.1 It has been written "For any kind of activity or construction in other than revenue area of ESZ, NOC must be taken from Forest office of STR" there is no such provision in ESZ

3/4

notification. Any tourism related construction on private/revenue areas of ESZ, the applicant has to take permission as per LAC Provisions of Wildlife Protection Act, 1972 and provisions of ESZ notification and approval of the monitoring committee. For all other activities permission/approval must be taken from concerned departments.

29. Table no 3-3 Zoning and Land-use: Sl no 7 under Ecotourism Zone, permissible ground coverage given are 10% and 7% respectively for Eco-huts/cottages and resorts. But in Table no 3-8, proposed developed area is allowed 20% of the total plot area. This needs to be corrected.


15/06/2024
(Alok Kumar)
Principal Chief Conservator of Forests
(Wildlife) & Chief Wildlife Warden, M.P.

4/4

संचालनालय नगर तथा ग्राम निवेश मध्य प्रदेश भोपाल

“कचनार” ई-5 पर्यावरण परिसर अरेसा कालोनी,इबोबगंज पुलिस थाना के पास,भोपाल-462018

E-Mail : mptownplan@mp.gov.in Phone No. : 0755-2427091

क्रमांक / 2828 / नग्रानि/आर.पी.सी./2021
प्रति,

भोपाल, दिनांक 28/6/21

प्रबंध संचालक
म.प्र. टूरिज्म बोर्ड
भोपाल।

विषय :- **Suggestions on “Section for proposed Landuse Landcover” from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.**

संदर्भ:- आपसे प्राप्त ई-मेल दिनांक 21.06.2021

उपरोक्त विषयांतर्गत लेख है कि विभाग के सुझाव Draft Zonal Master Plan of Eco Sensitive Zone of Satpura Tiger Reserve पर संलग्न प्रेषित है।

संलग्न :- यथोपरि

(अजीत कुमार)

आयुक्त सह संचालक
नगर तथा ग्राम निवेश
म.प्र. भोपाल



Comments/Inputs of Draft Zonal Master Plan of Eco Sensitive Zone of Satpura Tiger Reserve

SN	PAGE NO.	SUBJECT	REMARKS
1	9	TABLE 1.1 Developable land in ESZ Area	Total ESZ area 1079.43 sqkm figure कहाँ से लिया गया स्पष्ट नहीं है।
2	35	FIGURE 2.3 Decadal changes in LULC of ESZ	Figure 2.3 रिपीट किया गया है।
3	39	FIGURE 2.6 Classification of proposed LULC of ESZ	Text में 17.24 % लिखा गया है जो कि Figure 2.6 में Clear नहीं है।
4	42	FIGURE 2.8 Existing LULC of Tawanagar cluster	Agriculture area और Forest area के Colour coding मानचित्र में same दर्शायी है
5	45	TABLE 2.2 Change in LULC of Tawanagar cluster	2039.51 हेक्टेयर कहाँ से लिया गया है Clear नहीं है।
6	48	Proposed landuse landcover for Madhai Cluster	LAST LINE में FIGURE 3.11 एवं TABLE 3.3 गलत लिखा है।
7	50	TABLE 2.4 Change in LULC of Madhai cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
8	53	Proposed LULC for Dokrikheda Cluster	LAST LINE में FIGURE 3.13 एवं TABLE 3.5 गलत लिखा है।
9	55	TABLE 2.5 Area table for proposed land use of Dokrikheda cluster	Table 2.5 के नीचे लिखे text में Table 3.6 लिखा है जो कि गलत है
10	55	TABLE 2.6 Change in LULC of Dokrikheda cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
11	59	Proposed LULC for Madho-Bori Cluster	LAST LINE में FIGURE 3.15 एवं TABLE 3.7 लिखा है। जो गलत है
12	61	TABLE 2.7 Area table for proposed landuse for Madho-bori cluster	LAST LINE में Table 3.8 लिखा है जो कि गलत है।
13	61	TABLE 2.8 Change in LULC of Madho-bori cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
14	62	Existing LULC scenario	Figure 3.1 गलत लिखा गया है।
15	64	Proposed LULC for Bargondi cluster	Last line में Figure 3.17 एवं table 3.9 गलत लिखा है
16	70	FIGURE 2.19 Proposed LULC of Matkuli cluster	Index में Agriculture एवं Forest में colour coding same है।
17	72	TABLE 2.12 Change in landuse of Matkali cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
18	75	Proposed landuse for Pisua Cluster	Figure 3.21 एवं Table 3.13 गलत लिखा है
19	79	Existing LULC scenario	Figure 3.1 गलत लिखा है
20	81	Proposed landuse for Bandhan cluster	Last line में Figure 3.23 एवं 3.15 लिखा है जो गलत है
21	82	FIGURE 2.23 Proposed LULC of Bandhan cluster	Agriculture area और Forest area के Colour coding मानचित्र में same दर्शायी है

Jansel

SN	PAGE NO.	SUBJECT	REMARKS
22	83	Table 2.16 Change in LULC of Bandhan cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
23	88	Table 2.18 Change in LULC of Bhurabhat cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
24	92	Proposed landuse for Churni Cluster	Last line में Figure 3.27 एवं Table 3.19 लिखा है जो कि गलत है।
25	93	Figure 2.27 Proposed LULC for Churni cluster	Agriculture area और Forest area के Colour coding मानचित्र में same दर्शायी है
26	94	Table 2.20 Change in landuse of Churni cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
27	95	Existing LULC scenario	Last line में Figure 3.2 लिखा है जो कि गलत है।
28	96	Figure 2.28 Existing LULC of Alimod Baruth Cluster	Agriculture area और Forest area के Colour coding मानचित्र में same दर्शायी है
29	97	Proposed LULC for Alimod-Baruth Cluster	Last line में Figure 3.29 एवं Table 3.21 लिखा है जो कि गलत है।
30	98	Figure 2.29 Proposed LULC of Alimod Baruth cluster	Agriculture area और Forest area के Colour coding मानचित्र में same दर्शायी है
31	99	Table 2.22 Change in LULC of Alimod-Baruth	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
32	102	Proposed LULC Khamba Cluster	Last line में Figure 3.31 एवं Table 3.23 लिखा है जो कि गलत है।
33	104	TABLE 2.23 Area table for proposed landuse of Khamda cluster	Table के नीचे लिखे text में 3.24 लिखा है जो कि गलत है।
34	106	Figure 2.32 Existing LULC for Dhasai cluster	Agriculture area और Forest area के Colour coding मानचित्र में same दर्शायी है
35	107	Proposed land use for Dhasai cluster	Figure 3.33 एवं Table 3.25 लिखा है जो कि गलत है।
36	109	Table 2.25 Area table for proposed landuse for Dhasai cluster	Table के नीचे लिखे text में 3.2 लिखा है जो कि गलत है।
37	109	Table 2.26 Change in LULC of Dhasai cluster	Developed area में Existing LULC से Proposed LULC में कम है। जो कि possible नहीं है
38	115		जहाँ-जहाँ नगर तथा ग्राम निवेश विभाग के Act एवं Rules लागू होते हैं उन्हें केन्द्र सरकार द्वारा पारित Act तथा Rules ही Supersede कर सकते हैं, जिनका स्पष्ट उल्लेख किया जाना आवश्यक है।
39	125 to 132		Table में marking नहीं की गई है

- समस्त table में source दिया जाना चाहिए।
- मानचित्रों की numbering, Figure की जगह Map लिखकर की जानी चाहिए
- समस्त Figures एवं Table की Numbering check करें।
- समस्त Maps की Colour coding check करें।

Jangul
Joint Director
Town & Country Planning
S.M.P. BHOPAL

..3

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

Subject	Minutes of the Meeting for Preparation of Zonal Master Plan and Sub- Zonal Tourism Master Plan for Eco-Sensitive Zone (ESZ) listed in Cluster 4 (Satpura Tiger Reserve (STR) and Pench Tiger Reserve (PTR)) of Madhya Pradesh with IP Section, Madhya Pradesh Tourism Board and other Stakeholders	
Meeting Date	6 th July, 2021	
Place	Office of Madhya Pradesh Tourism Board, Bhopal, Madhya Pradesh Office of Town and Country Planning, Bhopal, Madhya Pradesh	
Participants	From Stakeholder/ Monitoring Committee	From SAI Consulting Engineers Pvt. Ltd.
	<p>Mr. Suresh Jhiria, Joint Director, IP Section, MPTB</p> <p>Mr. C.P. Nigam, Deputy Director, IP Section, MPTB</p> <p>Mr. Basant Singh, Manager, IP Section, MPTB</p> <p>Mr. Prashant Tiwari, Sub Engineer, MPTB</p> <p>Mr. Lalit Upadhyay, Advisor, MPTB</p> <p>Mr. Prashantsingh Baghel, Joint Director, MPTB</p> <p>Mrs. Tanvi Shrivastava, Tourism Planner, MPTB</p> <p>Mr. Amit Gajabhiye, Joint Director, TCPO</p> <p>Mr. Manoj Gehlot, Joint Director, TCPO</p> <p>Mr. L. Krishnamurthy, Field Director, Satpura Tiger Reserve</p>	<p>Mr. Nisarg Thanki, Urban Planner</p> <p>Mr. Parikshit Vala, Sr. GIS Analyst</p>
S. No.	Points Discussed/suggestions made	
6.	The Meeting was organized for Draft zonal master plan of Eco Sensitive Zone of Satpura Tiger Reserve at the office of the Madhya Pradesh Tourism Board dated 6 th July, 2021. Team of SAI Consulting Engineers Pvt. Ltd. – A Systra group Company presented the proposals prepared on land parcels pertaining to ownership of Madhya Pradesh Tourism Board included in Draft Zonal Master Plan for Eco Sensitive Zone of Satpura Tiger Reserve to the above mentioned members of IP section, MPTB during the meeting.	
7.	<p>A brief introduction about provisions of notification, the methodology adopted, and proposals of Zonal Master Plan were explained in the meeting. Proposals of zonal master plan on survey numbers for land ownership of Madhya Pradesh Tourism Board were discussed briefly. The list of plots is annexed with MoM. It was suggested to permit development of tourism activities in existing land parcels owned by Madhya Pradesh Tourism Board situated in proposed tourism zones of Master Plan as per the state tourism policy and bounded by the notification of eco-sensitive zone. Modification of activities were suggested in mentioned below survey numbers.</p> <ol style="list-style-type: none"> 1. Survey No. 9 of Chhirai Village for Camping. 2. Survey No. 1 and 3 of Sarangpur village for Accommodation purpose. 	
8.	During the discussion, the team of consultant were asked to discuss the proposals in the MPTB owned land parcels situated in village of Chhirai and Chakar. it was pointed out that the MPTB owned land	

	<p>parcel in Chhirai village is in core area of Satpura Tiger Reserve, which can be further developed within the purview of prevailing applicable acts.</p> <p>Furthermore, It was anticipated by the team of MPTB that Chakar village is also de-notified from Pachmarhi Sanctuary, but not in list of notified villages of ESZ. In response to that, team of consultant discussed the boundaries of ESZ on GIS platform and explained that Chakar village is forming the part of core area of STR. In further discussion, consultant was asked to finalize status (notified/ de-notified) of Chakar village from office of the Field Director, STR.</p> <p>Same has been discussed with the Field Director, STR and concluded that the land parcel situated in Chakar village is forming the part of Core forest zone and is not de-notified from the Pachmarhi sanctuary. (The gazette notification of de-notified villages of Pachmarhi Sanctuary and villages which are part of sanctuary is given in the annexure). The scope for consultant is limited to prepare the master plan for defined boundary of Eco-Sensitive Zone given as per the notification S.O. 2538(E).</p> <p>Location of Land parcels situated in Dhapada Mal and Gurgunda villages were also shown in the meeting. These land parcels are not within Eco-sensitive zone boundaries as per the notification stated above. The same was agreed by the officials of MPTB.</p>
<p>9.</p>	<p>A brief discussion regarding a sample sheet of 1:4000 and Government lands was carried out with Mr. Prashantsingh Baghel, Joint Director and Ms. Tanvi Shrivastav, Tourism Planner. Consultant was asked to finalize grid, layout of maps and representation of government land in proposed land-use map with Mr. Amit Gajabhiye, Joint Director, TCPO.</p>
<p>10.</p>	<p>As per the suggestion stated in sr. no. 4, maps and other details were discussed with Mr. Amit Gajabhiye, Joint Director, TCPO and Mr. Manoj Gehlot, Joint Director, TCPO at office of Town and Country Planning Organization, Bhopal. Discussion points are stated below.</p> <ul style="list-style-type: none"> • It was suggested that the legends in map layouts shall be in succeeding order of polygon, polyline and point. • The grid of geo-coordinates shall be displayed in layouts/ maps prepared in scale of 1:4000. • The color coding of Residential and Existing settlements shall be modified as per the state TCPO guidelines and proposed land-use maps prepared by TCPO. • Number of adjoining sheets are to be displayed in layout of each grid map. • It was suggested to mention 'submitted to' in map layout section followed with 'submitted by' categories in index of map. • The representation of government lands was briefly discussed during the meeting. It was agreed by the Joint Director that the ownership and proposed land-uses are the different categories of map. Hence, Government land can only be represented as indicative layer for reference. It was further added that the classification for use of government land according to its nearby proposals of land-use should be mentioned in the chapter no. 10: Definition of land use of the draft master plan report prepared for ESZ.

The meetings ended with vote of thanks.

Land Parcels owned by MPTB	
Village	Sr.No
Chhirrai	9
	32
Matkuli	40
	207
	208
	210/2
	216
	217
	263
	263
Dokrikheda	81
	82/2
	95/1
Sarangpur / Tekapar	1
	3
	56/10
	56/11
	56/13
	56/14
	56/15
	56/16
	56/17
	146
	198/1
	198/1
Mohgaon	7
	8
	11/3
	1 5/6

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शुद्ध मूल्य में खरीदा जा सकता है।



मध्यप्रदेश राजपत्र

(असाधारण)
प्राधिकार से प्रकाशित

अंक 104

भोपाल, बुधवार, दिनांक 22 दिसम्बर 2017 — की. 1, भा. 1939

वन विभाग

संरक्षण, चलाप भवन, भोपाल

भोपाल, दिनांक 22 दिसम्बर 2017

क्रमांक एक 15-19/2017/10-02 वन्यजन्तु (संरक्षण) अधिनियम 1972 (1972 का 53) की धारा 26क द्वारा प्रदत्त शक्तियों को प्रयोग में लाते हुए, राज्य सरकार, एतद्वारा, पंचमढ़ी अभ्यारण्य से 14 अधिसूचना से संरक्षण अनुसूची-एक में कथ्य दर्शित 11 घासों को पृथक करती है तथा पंचमढ़ी अभ्यारण्य से 14 संरक्षण अनुसूची-दो में दर्शित 28 घासों को प्रतिपादित करती है। उक्त अधिनियम के अंतर्गत वन्यजन्तु अभ्यारण्य से संबंधित उपरोक्त संरक्षण के रूप में रखे गए घासों को लागू नहीं होने, तथादि पृथक किए गए घास विनियमित घासों के अन्तर्गत होने, अर्थात् -

1) - एते पृथक घासों में इकोसिस्टम को प्रभावित करनेवाला या अन्य औद्योगिक/कृषि/गतिविधियां अनुपेक्षित नहीं होगी।

2) - पृथक किए गए घासों के लिये सम्बन्धित विनियम राज्य सरकार द्वारा विहित किए जायेंगे।

1368

मध्यप्रदेश राजपत्र, दिनांक 22 दिसम्बर 2017

अनुसूची-एक

पचमढी अभ्यारण्य से पृथक् किये गए ग्राम

अनुक्रमांक (1)	ग्राम का नाम (2)	ग्राम का प्रकार (3)	तहसील (4)	क्षेत्रफल (हेक्टेयर में) (5)
1	छिरई	राजस्व	पिपरिया	230.436
2	मेहन्दीखेड़ा	—तदैव—	—तदैव—	102.561
3	बिण्डाखेड़ा (डबरी)	—तदैव—	—तदैव—	129.66
4	मैली	—तदैव—	—तदैव—	66.83
5	चिल्लीद	—तदैव—	—तदैव—	127.716
6	मटकुली	—तदैव—	—तदैव—	458.837
7	मोहगांव	—तदैव—	—तदैव—	144.19
8	चंदन पिपरिया	—तदैव—	—तदैव—	97.021
9	पिसुआ	—तदैव—	—तदैव—	308.507
10	खारी	—तदैव—	—तदैव—	235.424
11	टेकापार	—तदैव—	—तदैव—	460.348
योग				2361.530

अनुसूची-दो

पचमढी अभ्यारण्य के संलग्नक के रूप में प्रतिधारित ग्राम

अनुक्रमांक (1)	ग्राम का नाम (2)	ग्राम का प्रकार (3)	तहसील (4)	क्षेत्रफल हेक्टेयर में (5)	कोर/बफर (6)	अभ्युक्तिता (7)
1	पाठई मालगुजारी	राजस्व ग्राम	पिपरिया	43.961	कोर	वीरान
2	पाठई ठेकेदारी	—तदैव—	—तदैव—	60.426	—तदैव—	—तदैव—
3	खामखेडी (फिकेरी टोला एवं टोला टोला)	—तदैव—	—तदैव—	24.428	—तदैव—	विस्थापित
4	काजीघाट	—तदैव—	—तदैव—	963.706	—तदैव—	—तदैव—
5	मोंगर	—तदैव—	—तदैव—	121.152	—तदैव—	—तदैव—

मध्यप्रदेश राजपत्र, दिनांक 22 दिसम्बर 2017

1368(1)

6	जामुनडोंगा (तेन्दुखेडा टोला)	—तदैव—	—तदैव—	158.499	—तदैव—	—तदैव—
7	घोघरी (नेक्सा टोला)	—तदैव—	—तदैव—	75.543	—तदैव—	—तदैव—
8	मुआर (मनकछार टोला)	—तदैव—	—तदैव—	48.877	—तदैव—	—तदैव—
9	सोनपुर	—तदैव—	सोहागपुर	420.62	—तदैव—	—तदैव—
10	कूकड़ा	—तदैव—	—तदैव—	66.490	—तदैव—	—तदैव—
11	नांदनेर	—तदैव—	—तदैव—	25.680	—तदैव—	—तदैव—
12	धारग्राम	वन ग्राम	पिपरिया	312.710	—तदैव—	—तदैव—
13	नानकोट	—तदैव—	—तदैव—	60.000	—तदैव—	—तदैव—
14	आंजनदाना	—तदैव—	—तदैव—	411.000	—तदैव—	—तदैव—
15	नयाखेडा	—तदैव—	—तदैव—	143.594	—तदैव—	—तदैव—
16	राईखेडा	—तदैव—	—तदैव—	273.550	—तदैव—	—तदैव—
17	पर्रासधानी	—तदैव—	—तदैव—	142.020	—तदैव—	—तदैव—
18	बिरजीखापा	—तदैव—	—तदैव—	161.874	—तदैव—	—तदैव—
19	धाना (कतिया खेरी)	राजस्व ग्राम	—तदैव—	131.495	—तदैव—	—
20	पगारा	—तदैव—	—तदैव—	29.547	—तदैव—	—
21	बारीआम	—तदैव—	—तदैव—	98.788	—तदैव—	—
22	चाकर	—तदैव—	—तदैव—	175.907	—तदैव—	—
23	सिंगानामा	—तदैव—	—तदैव—	318.347	—तदैव—	—
24	झिरिया ✓	वन ग्राम	—तदैव—	77.690	बफर	—
25	नांदिया (गुटखेडा टोला)	राजस्व ग्राम	—तदैव—	183.477	—तदैव—	—
26	सुपडोंगर	—तदैव—	—तदैव—	146.932	—तदैव—	—
27	सांकरी	—तदैव—	—तदैव—	0.743	—तदैव—	—
28	घुरनी	—तदैव—	—तदैव—	486.885	—तदैव—	—
	योग			5165.680		

PART:3 - ANNEXURE

Preparation of the Zonal Master Plan for Eco-Sensitive Zone - CLUSTER 4
Satpura Tiger Reserve (Satpura National Park, Pachmarhi & Bori Wild Life Sanctuary)

1368(2)

मध्यप्रदेश राजपत्र, दिनांक 22 दिसम्बर 2017

No.F-15-19/2017/10-2 In exercise of the powers conferred by section 26 A of the Wild Life (Protection) Act, 1972 (53 of 1972), the State Government, hereby excludes the 11 villages as shown in Schedule-I appended to this notification from the Pachmarhi Sanctuary and retains the 28 villages shown in Schedule-II as enclosures in the Pachmarhi Sanctuary. The provisions related with Wildlife Sanctuary under the said Act shall not be applicable to the villages kept as enclosure. The excluded villages will however be subjected to the following conditions, namely :-

- (a) No mining or other industrial/commercial activity, except ecotourism, shall be permissible in such excluded areas;
- (b) Appropriate regulations for excluded villages shall be prescribed by the State Government.

Schedule I

Villages to be excluded from Pachmarhi Sanctuary

S. No.	Name of village	Type of Village	Tehsil	Area in hectare
(1)	(2)	(3)	(4)	(5)
1	Chhirai	Revenue Village	Pipariya	230.436
2	Mehandikera	-do-	-do-	102.561
3	Bindakera (Dhabri)	-do-	-do-	129.66
4	Masli	-do-	-do-	66.83
5	Chailod	-do-	-do-	127.716
6	Matkuli	-do-	-do-	458.837
7	Mohgaon	-do-	-do-	144.19
8	Chandan Pipariya	-do-	-do-	97.021
9	Pisua	-do-	-do-	308.507
10	Khari	-do-	-do-	235.424
11	Tekapat	-do-	-do-	460.348
Total				2361.530

मध्यप्रदेश राजपत्र, दिनांक 22 दिसम्बर 2017

1368(3)

Schedule II
Villages of Pachmarhi Sanctuary to be retained as enclosure

S. No	Name of Village	Type of Village	Tehsil	Area in hectare	Situated Core/Buffer	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Pathai Malguzari	Revenue Village	Pipariya	43.961	Core	Uninhabited
2	Pathai Tharkedari	-do-	-do-	60.426	-do-	-do-
3	Khamkbedi (Fiferi Tola & Jhela Tola)	-do-	-do-	24.428	-do-	Relocated
4	Kanjghat	-do-	-do-	963.706	-do-	-do-
5	Mongra	-do-	-do-	123.352	-do-	-do-
6	Jamsudhonga (Tendukheda Tola)	-do-	-do-	158.499	-do-	-do-
7	Ghogheri (Neikna Tola)	-do-	-do-	75.543	-do-	-do-
8	Muar (Manekachilur Tola)	-do-	-do-	48.877	-do-	-do-
9	Sonpur	-do-	Sohagpur	420.62	-do-	-do-
10	Kukara	-do-	-do-	66.490	-do-	-do-
11	Nandner	-do-	-do-	25.680	-do-	-do-
12	Dhargason	Forest Village	Pipariya	312.710	-do-	-do-
13	Nankot	-do-	-do-	60.000	-do-	-do-
14	Atjandhana	-do-	-do-	411.000	-do-	-do-
15	Nayakheda	-do-	-do-	143.594	-do-	-do-

1368(4)

मध्यप्रदेश राजपत्र, दिनांक 27 दिसम्बर 2017

16	Raikheda	-do-	-do-	273.550	-do-	Relocated
17	Paraspani	-do-	-do-	142.020	-do-	-do-
18	Birjikhapa	-do-	-do-	161.874	-do-	-do-
19	Ghara (Katriya Khari)	Revenue Village	Pipariya	131.495	-do-	-
20	Pagara	-do-	-do-	29.547	-do-	-
21	Barianam	-do-	-do-	98.788	-do-	-
22	Chakar	-do-	-do-	175.907	-do-	-
23	Singanama	-do-	-do-	318.347	-do-	-
24	Jhariya	Forest Village	Pipariya	77.690	Buffer	-
25	Nandiya (Gutkhera Tola)	Revenue Village	Pipariya	183.477	-do-	-
26	Supdongar	-do-	-do-	146.932	-do-	-
27	Sankari	-do-	-do-	0.743	-do-	-
28	Chumi	-do-	-do-	486.885	-do-	-
	Total			5165.680		

मध्यप्रदेश के राज्यपाल के नाम से तथा आदेशानुसार,
संजय मोहरी, अपर सचिव



Madhya Pradesh State Rural Livelihood Mission
Government of Madhya Pradesh
Panchayat and Rural Development Deptt,
2nd Floor, Beej Bhawan Arera Hills,
BHOPAL
Email. ceo@mpraf.nic.in. Ph. No. 07552576814

No. / 4505/SRLM/ZONAL M.P./2021

Bhopal 22 July 2021

To,

The Managing Director, and
Principal Secretary,
M.P. Tourism Board,
Jehangirabad,
BHOPAL.

Sub: Providing inputs/suggestion from from Draft Zonal Master Plan.
Ref: your letter No. 3195/PLG/MPTB dated 31-5-2021

Kindly refer to your above mentioned letter by which MPTB sought inputs/ suggestions/ comments, of Madhya Pradesh State Rural Livelihood Mission in the chapter " Section for Agriculture and Livelihood from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmadhi and Bori Wildlife Sanctuary.

Our inputs/ suggestions and comments, on above referred chapter ,are enclosed herewith as annexure-1 for your perusal.

(L.M.Belwal)

Chief Executive Officer
MPSRLM

Annex - 1

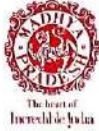
Comments on ESZ of STR proposal

Page Number	In Draft	Suggestions/ Corrections
27. Role of Volunteers and Self-help groups	<ul style="list-style-type: none"> To Collaborate with farmers from Mandal and Dingdori District who have successfully adopted the cultivation of Kodo and kutki Millets. The volunteers can seek help from these farmers and convince them to talk and motivate the farmers of STR The self-help groups can connect and coordinate with NGOs, volunteers and Farmer producing companies to tie up with the farmers of STR and help then in production of millets and also for value added production by using the millets. These tie up should also be linked with incentives to both farmers and the Companies. The incentives are to be fixed by negotiation process. 	<ul style="list-style-type: none"> Check Spellings of Mandla and Dindori The Self-Help Groups can connect and coordinate with their Cluster Level Federations, NGOs, volunteers and Farmer Producer Companies to tie up with the farmers of STR and help then in production of millets and also for value added production by using the millets.
28	Therefore, the volunteers from the center should try to establish a processing unit near the cluster with the help of self-help group and associated Companies.	Therefore, the volunteers from the center should try to establish a processing unit near the cluster with the help of Self-Help Groups and associated Cluster Level Federations and Farmer Producer Companies.
28	Promotion of Organic farming, encouragement to increase traditional crops production, use of biofertilizers and agro forestry can lead to develop agritourism in the region	Promotion of Organic farming, encouragement to increase traditional crops production, use of biofertilizers and agro forestry with the involvement of women Self Help Groups also can lead to develop agri-tourism in the region
45	these tribal enterprises will be in the form of Van Dhan SHG's which will be a group of 15-20 members and such 15 SHG groups will further be federated in to larger group of Van Dhan Vikas Kendras (VDVK's) of around 300 members	These tribal enterprises will be in the form of van dhan SHG's which will be a group of either already existing NRLM promoted SHG's IN the area or will be formod with the help of NRLM staff and such 15 SHG groups will further be federated in to larger group of Van Dhan Vikas Kendras (VDVK's) of around 300 members or may be adopted by already NRLM registered CLF (Cluster Level Federation) as VDK's
50-51 Household industries through SHGs:	Under National Rural Livelihood Mission and State Rural Livelihood Mission, SHGs have been formulated in villages. NRLM can promote household industries in collaboration with NGOs and other	SRLM can promote small scale enterprises / industries with the Cluster Level Federations, with Bank linkages, NGOs and other private sectors for packaging, manufacturing and other

Dinesh
ACO- MDSRLM

	private sectors for packaging, manufacturing and other type of industries. In addition, NGOs and other private sectors can provide training and resources through NRLM centres under super vision of Block managers of RLM centers.	type of industries. . In addition, NGOs and other private sectors can provide training and resources through SRLM under supervision of Block Managers of SRLM.
52	Establishment of Number of Poultry estates in collaboration with government-initiated agency, such as the National Cooperative Development corporation) NCDC.....	Establishment of Number of poultry estates in collaboration with government-initiated agency, such as the NRLM (National Rural Livelihood Mission, National Cooperative Development corporation) NCDC
54	It is very much necessary to raise awareness about this venture Use of locally available indigenous feed resources and ethno veterinary medicine and educating farmers can be viable options to improve backyard poultry production in rural area	The MPSRLM promoted CRP/ Pashu sakhri can be used as local resource person to organize awareness campaign in rural areas and also may provide door step services to adopt Use of locally available indigenous feed resource and ethno veterinary medicine and educating farmers can be viable options to improve backyard poultry production in rural area in a business model.
59	Private Sector is one of the most important part in Promotion of agro tourism	NRLM promoted Collectives and Private Sector are most important part in the promotion of Agro Tourism
		It is also pertinent to mention here the SRLM shall organise all deprived people (As per SECC Data 2011) into SHGs and higher level federation to augment their livelihoods and improve their overall Socio-economic conditions

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ACO - MPSRLM



मध्य प्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board

पृष्ठ संख्या
1.

Sub:- For suggestions in Draft Zonal Master Plan of Satpura Tiger Reserve.

Refer to the letter sent by MD, MPTB on 31/05/21, letter no. 3191/Plg/MPTB/2021 regarding providing inputs/suggestions in the chapter "section for Tourism" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura Tiger Reserve, letter copy of letter is also attached for your reference.

Soft copy of the report has been forwarded on your email ID on 26/11/21. Please send us if there are any comments to be incorporated in the report. If not, it is requested to provide us the approval to move forward to the next stage of the project without any delay.

[Signature]
26/11/21

Tourism Planner

JD(Plg). - सिप्रडा रिजर्व पार्क का ESZ master plan को सुधारें इस अंतर्गत -
इस क्षेत्र के लिए एक सुनिश्चित किया जाना आवश्यक है कि पर्यटन निगम की तरह इकाया, उपयोगकर्ता ESZ का master plan में एक टूरिज्म एंड जोनल master plan में अंतर्गत हो चुका है या नहीं



मध्य प्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board

5431 - for Suggestion of Zonal Master Plan

पृष्ठ संख्या
2.

सं. 767 / योजना
दिनांक - 26/11/2024

भारत पुनर्विचार को देख कर इन क्षेत्रों को संयोजित करने का प्रस्ताव माता, signature एवं मंजूरी के साथ यह अनुभव है कि उपरोक्त योजना / संयोजित करने के लिए मंजूरी का अर्थ है कि यह पुनर्विचार को कायम रखेगा। यह पुनर्विचार से संबंधित प्रस्ताव मंजूरी के लिए उपरोक्त क्षेत्रों को संयोजित करने के लिए प्रस्तावित किया जा रहा है।

यह अतिरिक्त चरण है अतः कामकाज देर से नहीं होगा।

कॉपी के साथ प्रस्ताव - पुनर्विचार - प्रस्तावित क्षेत्रों के साथ प्रस्तावित क्षेत्रों को संयोजित करने के लिए प्रस्तावित किया जा रहा है।

Software को लिखे Ms. Tanvi Shrivastava, T. Planner
MPB के अध्यक्ष को लिखे जा रहा है।

26/11/24

से. (MPSTDC) उच्च (U)

श्री राजीव जीवास्तव
कार्यपालन संचालक
अभिमत समय सीमा में प्राप्त कर
कोई को वापिस भेजा जाना
सुनिश्चित करें।

1. संलग्न कार्य लिखे 29/11/24
अभिलेख की गई है। उभय 3. 1375 डिजिटल
कगला की निर्दिष्ट क्षेत्रफल 325.10.02 वर्ग फुट
की इकाई 4670 वर्ग मीटर (लगभग)

2. प्रस्तावित क्षेत्र (वैरी) द्वारा तैयार किया गया
प्रस्ताव के अंतर्गत में प्रस्तावित क्षेत्रों को
संयोजित करने के लिए प्रस्तावित किया जा रहा है।



मध्यप्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board

पृष्ठ संख्या

निसरल निम्नाउकार

1 इंडी सेक्टर पास RF 436
 Commandate (M- 22° 19' 56.24"
 E- 077° 57' 07.22")

भूमि का क्षेत्रफल - 406728.00 वर्गफुट

कृपया निम्नाउकार (अ) अनुसूचित

याहण प्रक, सिटी नी Soft lobby
 rsborasitvns.mpt@mp.gov.in पर योग्य
 -करी)

CP
 निर म

6/12/21

J.D.(Planning)

5
 8/12

274/MP713/21
 10/12/21

प्राधिकृत शाखा
 जायक क्र. 1.6.50.
 दिनांक. 9.12.21

कार्यालय प्रधान मुख्य वन संरक्षक (वन्यप्राणी), मध्य प्रदेश

प्रगति भवन, भोपाल विकास प्राधिकरण, तृतीय तल, एम.पी.नगर, भोपाल

दूरभाष : 0755-2674318, 2674337, फ़ैक्स : 0755-2766315

E-mail : pccfwk@mp.gov.in

क्रमांक / व.प्रा. / माचि. / स.टा.रि. / ZMP / 2206
प्रति,

भोपाल, दिनांक 24/03/2022

प्रबंध संचालक एवं प्रमुख सचिव
मध्यप्रदेश टूरिज्म बोर्ड
लिलि ट्रेड विंग छठवां तल, जहांगीराबाद,
भोपाल, मध्यप्रदेश-462008

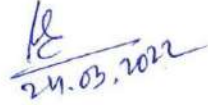
विषय :- **For providing inputs/suggestions in the chapter "Section for infrastructure" from Draft Zonal Master Plans of Eco Sensitive Zone of Satpura National Parks, Pachmarhi and Bori Wildlife Sanctuary.**

संदर्भ :- आपका पत्र क्रमांक / 3199 / PLG/MPTB/2021 दिनांक 31.05.2021

उपरोक्त विषयांतर्गत संदर्भित पत्र से आपके द्वारा सतपुड़ा राष्ट्रीय उद्यान, पचमढ़ी एवं बोरी अभयारण्य के पारिस्थितिकीय संवेदी जोन के तैयार किये जा रहे जोनल मास्टर प्लान के संबंध में अभिमत चाहा गया है।

उक्त संबंध में सतपुड़ा राष्ट्रीय उद्यान, पचमढ़ी एवं बोरी अभयारण्य पारिस्थितिकीय संवेदी जोन के तैयार किये जा रहे जोनल मास्टर प्लान में परिशिष्ट-1 पर दर्शाये अनुसार आवश्यक सुधार करने का अनुरोध है।

संलग्न :- उपरोक्तानुसार।


24.03.2022

(जसबीर सिंह चौहान)

मुख्य वन्यप्राणी अभिरक्षक एवं
प्रधान मुख्य वन संरक्षक (वन्यप्राणी), म.प्र.पू0 क्रमांक / व.प्रा. / माचि. / स.टा.रि. / ZMP / 2207
प्रतिलिपि :-

भोपाल, दिनांक 24/03/2022

1. एकजिवित्व डायरेक्टर, पर्यावरण नियोजन एवं समन्वय संगठन (EPCO) ई-5 अरेरा कॉलोनी, भोपाल, मध्यप्रदेश
2. क्षेत्र संचालक, सतपुड़ा टाइगर रिजर्व, होशंगाबाद की ओर उनके पत्र दिनांक 20.01.2022 के क्रम में सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

मुख्य वन्यप्राणी अभिरक्षक एवं
प्रधान मुख्य वन संरक्षक (वन्यप्राणी), म.प्र.

Annexure-I

Comments and Suggestion on the draft zonal master Plan for ESZ of Satpura National Park and Pachmarhi and Bori Sanctuaries are as follows-

Most of the maps included have very small legends that are mostly illegible.

Page-2 - Satpura Tiger Reserve instead of Satpura Tiger Reserves

Figur 1-12 Grazing lands in the STR. Should be renamed Suitably. Grass lands inside Bori (relocated villages) are shown in the map. Need to differentiate between grazing lands where village cattle graze and Grasslands within the forest, especially those in relocated village sites.

Table 1-64 table 1-7- Can change the heading from 'Visiting Date' to Date of visit.

Fig 1-14- Village survey form not legible. Should include in Annexure.

Fig. 1-6- The title needs to be relooked and suitably amended.

Table 2.1 Please Check year of Capt. James Forsyth's visit to Pachmarhi. Should be 1862 and not 1857.

Dates of formation and number to Preservation plots needs to be rechecked.

2.8.3. Should use the term Gaur instead of Bison and Check spelling of Nilgai.

Central Profile

Included is a section on Baiga. There are only Gond and Korku tribes in the area. Section to be suitably Changed .

5.2.1.1

2- Relook Should be 'An accessible'.

5.3 - Table 5.3 Sl. No.1 Stepwell instead of steepwell.

Page-277 - Discontinuity between pages 177 and 179. Numbering restarts at 1 after 6 in the previous page 177 Recheck numbering

Page 185 -

5.4.1 - Please correct spelling of Dr. Rajendra Prasad. Also correct to first President instead of first Vice President.

Page 187 - Use Kms for distances instead of miles.

Figur 5.49 - Specific Tiger name may be dropped.

5.5 - The description of Rock Art needs to be redrafted in order for it to be easily Comprehensible.

The rock painting are located mostly in rock shelters and not in caves as mentioned.



Page-192**Infrastructure Profiling**

Since most of the sites included in the ESZ are natural sites, one of our objectives should be to maintain its state of wilderness and not seek to construct infrastructure like change rooms and toilets at all the sites. This is also because many sites are adjacent to each other and suitable planning can be done to provide the basic amenities while keeping the natural character of the site intact.

7.8.5- Limited meadows . The Statement "STR have on only 4 small meadows" needs to be relooked.

Part -2**Table 10.1 - Land use codes not explained**

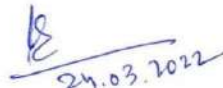
The cluster wise proposals for 14 clusters especially the proposed land use needs to be vetted by the Field Director, STR again if required.

Page-116 - Complete break from the last page Description of Darjeeling Botanical Garden is inserted without context

11.5 Wast water treatment

11.6 Solid waste Treatment

No plan for Pachmarhi where the current system is inadequate. Need for a good section detailing water and solid waste treatment measures.


24.03.2022
(Jasbir Singh Chauhan)
CWLW &
PCCF (WL), MP

Annexure 17.5 : Approvals from departments**मध्यप्रदेश टूरिज़्म बोर्ड | Madhya Pradesh Tourism Board**

पृष्ठ संख्या

1

Sub:- For providing inputs/suggestions in the chapter "Section for Tourism" from Draft Zonal Master Plan of Eco Sensitive Zone of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.

Ministry of Environment, Forest & Climate Change, Govt. of India notified Eco-Sensitive Zones of National Parks and Sanctuaries of Madhya Pradesh under Environmental Protection Act, 1986 and Gazette Notifications were issued accordingly.

In the said Gazette notifications, Govt. of M.P. was given responsibility to prepare Zonal Master Plan of Eco-Sensitive Zone of notified National Parks and Sanctuaries within a period of 2 years from the date of publication of notification in the official Gazette. Therefore, Madhya Pradesh Tourism Board has taken the initiative to prepare the Zonal Master Plans of Eco-Sensitive Zone. In the notification, Govt. Departments are mentioned as stakeholders and in consultation with these departments, Zonal Master Plans shall be prepared.


Under the umbrella of Zonal Master Plan for Eco-Sensitive Zones, initiative of Madhya Pradesh Government and the guidelines of Ministry of Environment, Forest and Climate Change (MoEFCC), protected area of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, is taken by consultant M/s. SAI Consultant Engineers Pvt. Ltd. to prepare Zonal Master Plan for its Eco-Sensitive Zone with an objective to protect the biodiversity and habitat of the protected area. Final notification for Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary was published by MoEFCC.

At State level, Evaluation Committee is constituted in which competent officers from different government departments are members. After the Monitoring Committee meeting/Stakeholders meeting, Evaluation Committee meetings were done for both the stages. Comments from the members were also incorporated in the reports. Updated Draft Zonal Master Plan report was submitted by the consultant to MPTB after incorporation of comments from the final evaluation committee meeting.

Now, before the finalization of this Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary, it has to be sent to concerned departments for their comments/ suggestions/ inputs, if any. Therefore, chapter related to Tourism, i.e. "Section for Tourism" from Draft Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary is sent on your email so that valuable inputs are incorporated in the Final Zonal Master Plan.

The project has a stringent timeline; therefore, I request you to send your valuable inputs/ comments /suggestions to Planning department within 10 days, till 10th June'21. If no inputs /comments/ suggestions are received from your department within 10 days, the chapter will be considered approved from your end and we will proceed with the finalization of Zonal Master Plan of Satpura National Park & Pachmarhi & Bori Wildlife Sanctuary.


1/6/21
Tourism Planner





मध्यप्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board
Subt. for providing inputs/suggestions

पृष्ठ संख्या
2

मस/3 - 322/म/07
दि/10 - 01/06/2021

Refer to N.S. page no.35,36,37 regarding approval of taking opinion / comments from concerned department / sections regarding relevant part / chapter of draft ESZ Master plan of Satpura Tiger Reserve.

The relevant section for Tourism has already been forwarded to you on mail.

Please submit your comment / opinion or suggestions regarding content of the chapter. The timeline for providing suggestions is 10 days as fixed by MD sir.

~~322/EP~~

सतपुरा नेशनल पार्क अन्तर्गत इको सेंसिटिव जोन हेतु तैयार मास्टर प्लान अन्तर्गत सम्मिलित ग्रामों आदि तथ्यों का अवलोकन कर अभिप्राय देने हेतु प्रेषित, ताकि उक्त ड्राफ्ट मास्टर प्लान पर अभिप्राय प्रेषण शाला को प्रेषित किया जा सके।

1/6/21
322/EPB

अध्यक्ष (IP)

3/6/21

म. प्र. टूरिज्म बोर्ड
आ. क्र. 01 JUL 2021



मध्यप्रदेश टूरिज़्म बोर्ड | Madhya Pradesh Tourism Board

पृष्ठ संख्या

3

विषय:-सतपुड़ा नेशनल पार्क अंतर्गत ईको- सेंसिटिव जोन हेतु मास्टर प्लान के संबंध में ।

संदर्भ:-आपका ईमेल दिनांक 01/06/2021 ।

सतपुड़ा नेशनल पार्क अंतर्गत ईको सेंसिटिव जोन हेतु तैयार ड्राफ्ट मास्टर प्लान का गहन एवं विस्तारित अध्ययन किया गया । अध्ययन उपरान्त इसमें निम्नलिखित तथ्यों को ड्राफ्ट मास्टर प्लान की कण्डिका 1.1.3 SWOT Analysis में जोड़ा जाना आवश्यक है ।

Strength	Opportunity	Weakness	Local People Specially Tribues
(1)	(2)	(3)	(4)
Water body Along with Wildlife	River Crouse along with wildlife	No required system to allow tourism in Tawa reservoir by the state departments.	May visited opening up their wildlife

कण्डिका 2.4.1 वाईल्डलाईफ टूरिज़्म जोन मढ़ई क्लस्टर अंतर्गत सारंगपुर ग्राम में टूरिज़्म विभाग द्वारा रिसोर्ट निर्माण हेतु निजी निवेशक को भूमि आवंटित की गई है । अतः उक्त ग्राम को भी रिसोर्ट केटेगरी में लिया जाना चाहिए । इस क्लस्टर को वॉटर टूरिज़्म एवं क्रूज टूरिज़्म के लिए भी आरक्षित किया जाना चाहिए। क्योंकि देनवा नदी से तवा बांध में क्रूज/वॉटर टूरिज़्म फलीभूत हो सकता है।

कण्डिका 2.4.3 अंतर्गत डोकरीखेड़ा ग्राम में पर्यटन विभाग की भूमि उपलब्ध है, यहाँ भविष्य में निजी निवेशक को रिसोर्ट आदि पर्यटन परियोजना की स्थापना हेतु भूमि आवंटित किया जाना है ।

बोरी सेन्चुरी अंतर्गत धपाड़ामाल और गुरुगुन्दा ग्रामों का उल्लेख मास्टर प्लान में अवलोकित नहीं हुआ है, इन गांवों में भी Accommodation जैसी पर्यटन गतिविधियों के लिए जोड़ा जाना चाहिए । इसी तरह मटकुली के आसपास चाकर कठोतिया, छिर्ई जैसे ग्रामों को भी Accommodation जैसी पर्यटन गतिविधियों के लिए जोड़ा जाना चाहिए । इन ग्रामों में रिसोर्ट जैसी गतिविधियों के लिए भूमि पर्यटन विभाग को आवंटित हुई है ।

पचमढ़ी के आसपास चौरागढ़, राजेन्द्रगिरी, धूपगढ़ तथा छोटा-बड़ा महादेव क्षेत्र में रोप-वे अथवा केवल कार जैसी गतिविधियों को जोड़ा जाना चाहिए । इसी तरह पचमढ़ी के आस-पास हॉट एयर वैलून, सी-प्लेन/हेलीकॉप्टर टूरिज़्म को भी जोड़ा जाना चाहिए ।

निरंतर.....



मध्यप्रदेश टूरिज़्म बोर्ड | Madhya Pradesh Tourism Board

संख्या
4

विषय:-सतपुड़ा नेशनल पार्क अंतर्गत ईको- सेंसिटिव जोन हेतु मास्टर प्लान के संबंध में ।

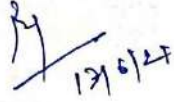
पूर्व पृष्ठ से.....

वस्तुतः मास्टर प्लान में जितने भी टूरिज़्म जोन बनाए जा रहे हैं उन सभी जोन में एक प्रावधान "टूरिज़्म पॉलिसी में परिभाषित/वर्णित पर्यटन परियोजना के लिए आरक्षित" जोड़ा जाना चाहिए ताकि भविष्य के लिए निवेश एवं अधोसंरचनात्मक विकास की सम्भावना बनी रहें ।

283
16/6/24


उप संचालक (नि.सं.)

संयुक्त संचालक (प्लानिंग)


17/6/24

~~r-planar~~

Shared with consultant on mail.



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मध्यप्रदेश टूरिज़्म बोर्ड | Madhya Pradesh Tourism Board

पृष्ठ संख्या

5.

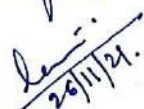
Sub:- Compliance of the comments received from
IP section.

Refer to the notesheet 3 & 4, comments were given by IP section, MPTB on Draft Zonal Master Plan of Satpura Tiger Reserve. The comments were forwarded to the consultant M/s SAI Consulting Engineers Pvt. Ltd. for its incorporation in the DZMP report. Comments were incorporated by the consultant and sent to us.

Forwarding you the compliance report and the pages of the report where compliance of comments have been made.

Please look into the compliance of the comments made by the consultant and also if there is anything left to be incorporated in the report. Full DZMP report is also being forwarded for your perusal please. Kindly provide us the approval to carry on with the next stage of the project if everything seems fine in the report.

J.D. (P.S.)


26/11/21.
Tourism Planner



मध्यप्रदेश टूरिज्म बोर्ड | Madhya Pradesh Tourism Board

पृष्ठ संख्या
6

Sub: Compliance of the comments received from IP section.

IP से - 766 / 24/11/24
दिनांक - 26/11/2024

(अपुस) ने. चो का इको सेन्सिटीव जोन का जोनल मास्टर प्लान बनाया है - जो निरीक्षण के अतिरिक्त माला नेट से है, लेकिन कोन्सल्टिंग- एंड काफेस उक्त से एवलेनस जायसलर लान्त पुरवेली - जो जायसली ग्राहक ए. इंकोर्पोरेटि की गृह है। इतक करण में आनखुरा की तैयारी- किया गया है।

कैव: इतका सेन्सिटीव माप में इतकी लान्त का निरीक्षण, परतल हेतु उपरोक्त लान्त- माला प्लान में इतको निरीक्षण के लिये जायसली. का- अन्वेषण ए. अमकर- से ए. एडर की फी. डिग्री की उपलब्धि जायसली एडर माला प्लान में जोड़ी नहीं गई है जो एडर से ए. एडर ए।

एडर माला प्लान में निरीक्षण- जो माला से इतकी ए अतिरिक्त परतल है कैव: । एडर में ए. एडर से जायसली ए प्रिन्सिपल एडर से एडर की उपलब्धि की एडर की आवश्यकता एडर- M. Tanna Shirwadani T. P. P. P. से निरीक्षण जा एडर है।

IP से - 10/11/24
दिनांक - 26-11-24

JD / (CP)

IP शाखा के सुझावों को (A) अनुसूचित लिखित- जाते के अनुसार IP शाखा को कोई आपत्ति नहीं है। इतके अतिरिक्त अन्य कोई सुझाव नहीं है। कृपया आवश्यकता पड़ने पर सूचित।

JD (P)

T. P. P. P. 15/11/24

Mailed consultant on 15/11/24.