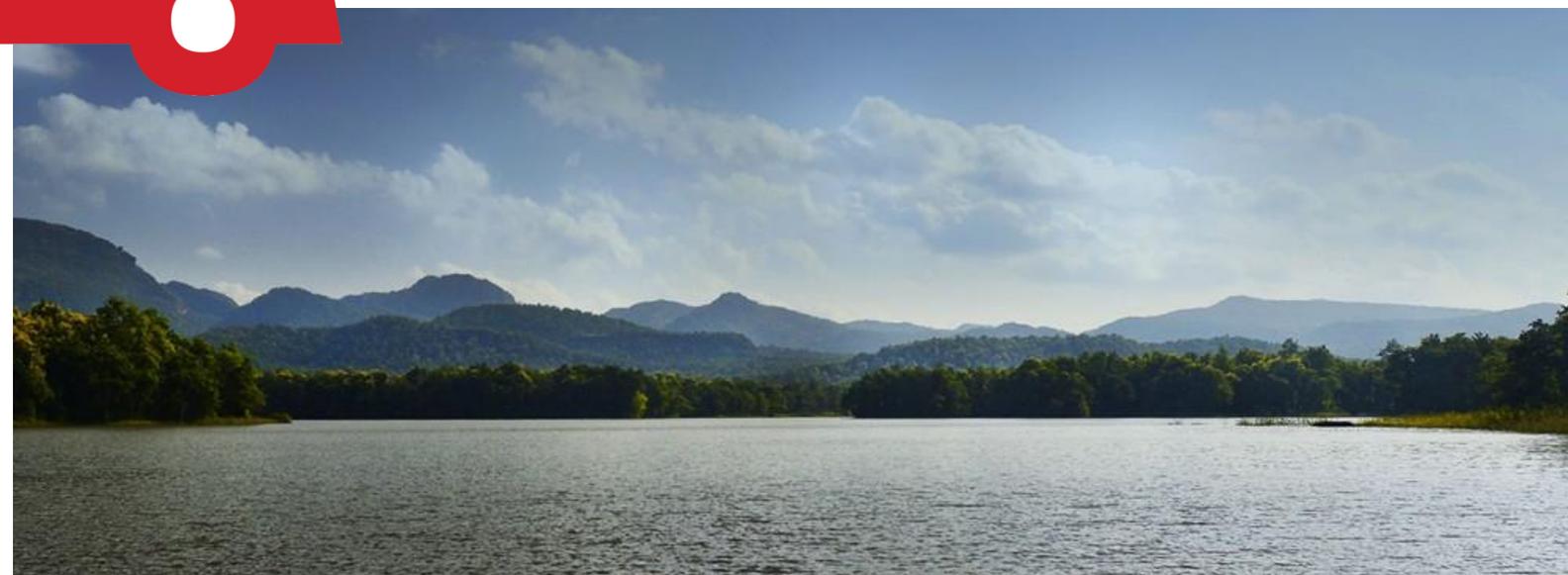


PREPARATION OF ZONAL MASTER PLANS FOR ECO SENSITIVE ZONES: SATPURA NATIONAL PARK AND PACHMARHI & BORI WILDLIFE SANCTUARY



VOLUME 1 – ZONAL MASTER PLAN



**Madhya Pradesh
Tourism Board, Bhopal**

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

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ABBREVIATION

ESZ	:	Eco-Sensitive Zone
Sq. km	:	Square kilometre
Ha	:	Hectare
FTL	:	Full Tank Level
HFL	:	High Flood Level
GIS	:	Geographical Information System
STR	:	Satpura Tiger Reserve
PA	:	Protected Area Boundary
MoEFCC	:	Ministry of Environment, Forest, and Climate Change
PPH	:	Person Per Hectare
Km	:	Kilometre
MFP	:	Minor Forest Produce
SAI	:	SAI Consulting Engineers Pvt Ltd (SYSTRA Group)

1 PLANNING A GREEN LANDSCAPE

Zonal Master plan and Sub zonal tourism master plan for eco sensitive zone of Satpura Tiger Reserve is a visionary document with well-defined aim and objectives.

1.1 THE VISION

To thoroughly study and comprehensively evaluate the far-reaching influence of Eco-Sensitive Zones on regional development, while carefully unfolding a strategic and well-planned approach to disburse or earmark a robust development strategy aimed at promoting sustainable development, thereby significantly boosting socio-economic activities, all while steadfastly ensuring the preservation and conservation of natural habitats and diverse wildlife.

1.2 OBJECTIVES

Objectives are the key components of the master plan to achieve defined aim. The Objectives are classified into two types-

1.2.1 Short-Term Objectives

- i. To **provide sustainable Development strategies** for minimizing risk of impact from natural growth of the settlement and other development needs.
 - ✓ To regularize the developmental activities in the eco sensitive zone
 - ✓ Provision of infrastructure facilities for local communities
- ii. To **promote Eco-tourism** in Eco Sensitive Zone
 - ✓ To explore and develop Eco-tourism potentials in Eco Sensitive Zone considering
 - ✓ Provision of basic infrastructure facilities on tourist sites as per carrying capacity

The first objective is concerned with development activities in the ESZ. All the 81 notified villages under ESZ will expand in future as per individual needs, so the first objective provides a platform for sustainable strategy for development which will minimize the risk of impact of any developmental activities in the ESZ. Satpura Tiger Reserve is rich in terms of biodiversity and natural resources. The second objective focuses on conservation and management of natural resources of Eco Sensitive Zone and promoting sustainable use of the natural resources.

1.2.2 Long-Term Objectives

- i. To **prevent depletion of natural resources**
 - ✓ to restrict development which may affect depletion of natural resources through development guidelines and proposed land use
 - ✓ To promote sustainable use of natural resources
- ii. To **generate livelihood opportunities** for local communities of Eco Sensitive Zone through community participation and skill development
- iii. The third objective concerned about **promotion of eco-tourism activities** in the eco sensitive zone is to create balance between conservation of natural resource and development activities. As a result of promotion of eco-tourism, it will create employment opportunities in various sectors of economy.

2 THE STRATEGIES

The chapter discusses the Existing Land Use Plan, suggested guidelines for development, and proposed areas for Eco-Restoration.

2.1 ECO-FRIENDLY LAND USE PLANNING

Landuse landcover has been prepared based on the data received from State IT Department as shown in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.1, Figure 2.1 and Table 2.1. The zonal master Plan for Eco-Sensitive area is supporting the eco-Friendly land use planning (Conservation planning).

2.2 AREAS FOR SUSTAINABLE DEVELOPMENT

All the natural resources like waterbodies, forest etc. are to be conserved by proposing no development zone in the area and surrounding buffer area. Some areas of the forest where tourism activities are allowed, structures like tree cottages and tree houses with minimum disturbance to the nature is permitted. Forest areas where eco-tourism activities, eco cottages and huts are proposed, the cottages should be developed in such a way that it does not harm the nature. Landscape and gardens as well as social forestry can be developed in the areas of eco cottages for beautification and ambiance of the place. Areas where resorts are proposed, and areas considered for future expansion of the settlement area will be developed in a planned way with eco-friendly materials like bamboo, wood, mud etc. and green building concept. Rural settlement and future expansion area will develop based on form-based codes in accordance with suggestive development guidelines. Urban settlements and Rural Settlement Area of villages are generally the most congested and dense areas. Regularized development of Urban areas and Rural Settlement Area areas will lead to ease of living and planned development of area. Concept of suggestive proposed Development in ESZ is shown in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.2, Fig. 2.2.

2.3 SUGGESTIVE GUIDELINES FOR DEVELOPMENT

The suggested guidelines for development in ESZ should be flexible yet conservation-oriented, ensuring that local communities are not adversely impacted by development activities. The development activities within the ESZ will only proceed following formal approval and in strict adherence to the approved plan. The guidelines aim to strike a balance between sustainable development and the preservation of the sensitive ecological environment. Their primary objective is to safeguard local ecosystems while promoting responsible development that benefits both the environment and residents. The following are the key suggestive guidelines to be considered for implementation:

- **No new commercial activities within 1 km from protected area:** Within one km from the boundary of Protected Area, no new commercial construction is allowed, but renovation and reconstruction of already existing commercial construction are allowed within the existing built-up area. Refer Gazette Notification No. 2538 E, dated 9 August 2017 was published by The Ministry of Environment, Forest and Climate Change (MoEFCC), Refer Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2.3.

- **Permissible Activities around water buffer area:**

The uniform guidelines have been followed to provide buffer area around the water bodies which will be act as a riparian zone. In that buffer area around water bodies only **conservation measure, agriculture and allied activities are allowed** (Regulated and Promoted Activities). Apart from mentioned activities rest of the activities are prohibited. Refer Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2.4.

Conservation areas for Water Bodies (Buffer)

Uniform guidelines have been established to define the necessary buffer zones around water bodies in the region. All the reservoirs and large rivers lie outside the ESZ. The conservation area for water bodies covers an area of 1328.36 hectares. These guidelines are as follows:

1. A minimum of 50 meters from the HFL/FTL of large rivers and lakes.
2. A minimum of 15 meters buffer from the edge of small water bodies such as ponds and streams.

-
- **Activities allowed in steep slopes areas:** For the conservation of steep slopes which is more than 20 degrees are only few activities allowed in that area, and these are:
 1. Local people shall be permitted to undertake construction on their land for their residential use.
 2. Widening and strengthening of existing roads and construction of new roads
 3. Construction and renovation of infrastructure and civic amenities
 4. The ongoing regulated and promoted activities will be allowed in the ESZ.

Apart from mentioned points all other activities will be prohibited in the slope areas such as industries, home stays, new commercial activities, new hotels and Resorts. Refer Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2.5.

- **Guidelines for development in the Tiger Corridor:**

As per the National Tiger Conservation Authority published guidelines for development in the Tiger Corridor. Refer Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2.6 and 2.7. The following regulations are:

- I. Residential Construction shall be allowed in all abadi land and till 100 meters distance from the Abadi Land.
 - II. In non-Abadi land, residential construction is allowed with FAR restriction of 0.1
 - III. Widening and strengthening of roads shall be allowed only after obtaining approval from the Forest Department. (Wildlife board)
 - IV. Construction and renovation of infrastructure and civic amenities are allowed.
 - V. No new commercial construction allowed in Tiger corridor area.
- **Guidelines for the development of Temple in steep slopes and 1 km from protected area:**

The religious sites located within 1 km from the protected area and on the hill slopes, the regulation criteria is clearly defines that development will be allowed only to existing conditions for temple development only. No new commercial structure and no expansion commercial structure allowed in the religious place located in steep slope and 1 km from the protected area.

2.3.1 Suggested Guidelines for development of hotels and resorts

The development of hotels and resorts in India is governed by various guidelines, rules, and regulations. Here's an overview of the relevant guidelines and the dos and don'ts for activities in these establishments are attached in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3.1.

2.3.1.1 Status of Pachmarhi Sanctuary

No.F-15-19/2017/10-2 In exercise the powers conferred by section 26 A of the Wildlife (Protection) Act, 1972 (53 of 1972), the state Government, hereby excludes the 11 villages as shown as Table - Attached in annexure 1.2, section 1.2.2 appended to this notification from the Pachmarhi Sanctuary. Refer Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3.1. The excluded villages will however be subjected to the following conditions, namely:

- a) No Mining or Other industrial/Commercial activity, except eco-tourism shall be permissible in such excluded area.
- b) Appropriated regulations for excluded villages shall be prescribed by the State Government.

2.4 AREAS FOR ECO-RESTORATION

Forest and Biodiversity are the key feature of STR. The region has some of the oldest forest area in protected area of STR, which has been habitat to wild animals from years. The forest has variety of species in flora, which are unique to the area, and some are mixture of southern and northern forest of India. The suggestive locations for Eco-restoration such as

- Socio and Agro Forestry (Bardha, Dhasai, Bhurabhat, Sangakheda, Mehendikheda, Jhirpa, Matkuli, Bargondi, Sarangpur, Mangaria and Ranipur Tawanagar). Annexure 1.2, Chapter 1.2.2, Section 1.2.2.4.2

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- Bio-diversity Park (Bandhan and Dahelia, Bargondi, Pachmarhi and Madhai) as shown Annexure 1.2, Chapter 1.2.2, Section 1.2.2.4.3
 - Proposals for Botanical Park and Herb Park (Sarangpur, Alimod Pachmarhi and Sangakheda) as shown Annexure 1.2, Chapter 1.2.2, Section 1.2.2.4.4
 - Proposals for butterfly park and Flower trails (Tawanagar, Alimod, Pachmarhi and Dokrikheda), have been identified and mentioned in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.4.5

To protect and preserve these forest areas in Satpura Tiger Reserve, protective infrastructure is proposed in ESZ. To reduce the poaching in STR, a strict patrolling should be carried out in sensitive zones for the poaching. The use of technologies like Cameras, Drones, Thermal Cameras, SMART and other suitable surveillance & management methodologies should be adopted. The fencing for sensitive area with alarm should be done to stop the poaching incidents.

3 THEME PLANS

3.1 RESTORATION OF SOIL MOISTURE REGIME AND LAND CONSERVATION

Hills and Mountains

STR has the flat landscape but having undulating landscape which provides a mesmerizing beauty to the area. The suggested measures for slope stability can be implemented in the ground for conservation measures are mentioned in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.1.2.

Conservation through Agriculture

Conservation Agriculture focuses on soil management practices that preserve soil structure, composition, and biodiversity. Its core principles include maintaining soil cover (using crop residues or cover crops), minimizing soil disturbance through minimal tillage, and implementing crop rotations to manage biotic challenges as shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.1.3. It also promotes green manures, no burning of crop residues, integrated pest and disease management, limited soil traffic, and the use of bio-fertilizers and bio-pesticides.

3.2 RAINWATER HARVESTING

Rainwater harvesting is the technique of collection and storage of rainwater at surface or in sub-surface aquifers, before it is lost as surface run-off. Some suggested measures are mentioned in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.2.

3.3 WASTEWATER TREATMENT

Due to lack of wastewater management, currently all the domestic wastewater is directly disposed to the nearby waterbody without any treatment. Wastewater is to be collected through drainage system and is to be treated and then can be disposed to nearest waterbody or can be reuse in agricultural activities. Based on topography of village, suggestive location of disposal points with treatment facility are shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.3.

3.4 SOLID WASTE MANAGEMENT

Considering rich biodiversity of STR, Solid and Liquid waste management should be provided in all the villages and towns of ESZ of STR at household level, community level and village level for effective management the waste. Currently only Pachmarhi has SWM system in entire STR. For effective implementation of Solid waste mangement, a conceptual model has been prepared as shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.4, Fig. 3-7.

Solid waste management should be initiated from household level and hotel/Resorts. Door-to-door collection method and Composting methods (NADEP Method, Vermicomposting and Biogas from organic solid waste) should be promoted in the ESZ.

3.5 MANAGEMENT OF WATER SUPPLY, DRAINAGE AND STORM WATER

To provide basic physical infrastructure facilities, clusters are formed based on topography and distance of villages. Infrastructure facilities in villages with more than 3 km distance from other settlement should be developed as an individual village. List of clusters and villages for physical infrastructure are shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.5, Fig. 3-11.

Water Supply - Tap water connection should be provided at household level for water supply in the villages of ESZ. Where tap water connection is not possible, community stand post or hand pumps should be provided within 100 m from settlement area.

3.5.1 Sanitation In Villages of ESZ

Under the Swachh Bharat Mission, most households in all villages within the ESZ have had individual toilets constructed in recent years. The construction of household and community toilets in these villages will contribute to achieving Sustainable Development Goal 6 (SDG 6): Clean Water and Sanitation.

3.6 SOCIAL INFRASTRUCTURE FOR VILLAGES

Social Infrastructure is one of the critical aspects when it comes to development of rural area. Social infrastructure includes education facilities, public health facilities, Banking facility, recreational facilities etc. Suggestive locations for education, healthcare facilities, haat bazaar are shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.6, Fig. 3-13.

3.7 VEHICULAR TRAFFIC CONTROL

Roads are vital for rural communities, enabling access to goods and services and supporting economic development. Currently, 56% of STR's villages have gravel roads, and 55% access private transport. Proposals to improve connectivity include widening 71.56 km of roads and constructing 101.88 km of new roads, with conservation measures like wildlife passages, speed control, and silence zones to protect both animals and humans. Refer Annexure 1.2, Chapter 1.2.3, Section 1.2.3.7.

3.7.1 Proposal for Road widening and improvement of roads

In the rural areas of STR, major part of their travel needs is comprised of travel to marketplace, education centre and health centre. Additionally, these links can be helpful to develop tourism at potential places. All have good road connectivity, with existing and proposed road lengths details in tables and maps, Annexure 1.2, Chapter 1.2.3, Section 1.2.3.7.1, Fig. 3-16.

Total length of newly Proposed Roads are 94.26 km and 255.04 km of roads are proposed to widen in Eco-Sensitive Zone of Satpura Tiger Reserve. Proposed widening and new proposed road will be as per decision/prior permission by forest department and NTCA guidelines.

3.7.2 Proposal for Bus stop

To improve connectivity and public transport for local communities and tourism, a bus stop is proposed at Matkuli, the major center and Block Headquarters, to serve the entire ESZ.

3.7.3 Proposals for Conservation and Safety

ESZ boasts diverse flora and fauna, but expanding road networks and traffic may increase wildlife-human conflicts. To mitigate this, physical and policy measures, aligned with MoEFCC and Wildlife Institute of India guidelines, are proposed to protect humans and nature. STR is divided into five zones based on forest presence, wildlife occupancy, tourism sites, and green corridors. Refer Annexure 1.2, Chapter 1.2.3, Section 1.2.3.7.3.

- 1. Forest Zone:** The area included under this zone are reserve forest and having the animal movements and occupancy. Forest zone has the area which has green corridor connectivity for Pench and Melghat. This area is sensitive areas for wildlife movement. This zone includes Dhasai, Kelipunji, Bhatodi, Dandalum, Dundi, Aanhoni, Ranipur(Tawanagar), Chicha, Chatua, Daudi, Jhunkar, Kotmi, Maruapura, Ladema and Bardha.
- 2. Forest and Tourism zones:** The area included in this zone has the forest cover but important for potential existing and proposed tourism sites also. Baruth, Chhatiam, Kurai, Alimod, Anjhandhana and Bandhan from south of Satpura Tiger Reserve. Kharpawad, Pathai, Mangaria, Urdon, Ghogri, Tekapar Chaurmarhi, Sarangpur, Kamti and Sehra from Madhai area which have animal spotting and movements are considered under this zone.
- 3. Agriculture Zone:** The area has only agriculture and very less forest as well as very less occupancy of the wild animals is considered in this zone. Sanghii, Muharikala, Choka, Dokrikheda, Madho, Bori, Raitwari, Amadeh, Ghogri matha, Nayegaon and Maharajganj has predominantly agriculture area and very less forest area. In southern STR, Bijori, Sangakheda, Kundaidhana, Nishan, Umardole, Belkhedi and Lukhadhana have the most agriculture land and less of the forest area.
- 4. Matkuli & Pachmarhi zone:** By having protected area at three sides, Matkuli cluster has animal occupancy as well as traffic for the area. Because of connectivity to Pachmarhi and Proposal for commercial also causes vehicular movements on the roads. The zone includes villages like Pisua, Bindakheda, Mehandikheda, Malli, Matkuli, Chillod, Moahgaon, Khari, Chhirai, Tekapar, Karer, Navatola, Khanchari, Jhirpa, Fiferi, Aaditoria and Neksa.

3.7.4 Signages

To avoid the accidents of animals, the signages on road is mandatory to warn the drivers. This will be helpful to alert the drivers on that route.

- 1. Forest Zone:** Signages are frequently required in the zone as these areas have the animal occupancy and movement. signages alongside road at distance of 2 km to be provided. Signages for speed breaker as well as animal structure also provided at suitable distance.
- 2. Forest and Tourism zones:** Signages in this zone proposed at every 2 km and at animal crossing structures for the warning.
- 3. Agriculture zone:** Agriculture areas have the minimum occupancy except the wild pigs. The signages in this area should only provide on major roads at distance of 5 km.
- 4. Matkuli & Pachmarhi zone:** This zone has the numbers of monkeys in area of Matkuli, pachmarhi and surrounding. The signages in the area should be developed at 1 km and signages for silence zone in night should be provided.

3.7.5 Speed Breakers

To enhance wildlife safety and reduce vehicle-related accidents in the ESZ, speed breakers, humps, and rumble strips are proposed to control vehicle speeds, particularly in forest and settlement areas, as determined by STR authorities. Zone wise proposals are shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.7.5.

3.7.6 Fencing

Fencing can be developed along entire linear infrastructure or can be developed among the known animal passing sections only.

3.7.7 Wildlife Passages

Suggested structures for wildlife passages include tunnels or underpasses that accommodate local species.

- **Natural Crossings:** Canopy cover over kaccha/small roads supports arboreal species. Promote existing natural crossings and encourage vegetation growth every 100-200 m along roads for small animal movement.
- **Underpasses:** Tunnels, box culverts (3.5 m clearance with ledges for terrestrial species), and pipe structures (<1.5 m diameter) facilitate terrestrial and aquatic species (frogs, turtles, small mammals). Native vegetation at ends enhances usage.
- **Overpasses/Flyways:** Canopy bridges (poles, ropes, wooden ladders) with bush/tree cover at ends aid tree-dwelling species (monkeys, squirrels).

Proposed Wildlife Passage Structure in Eco-Sensitive Zone are shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.7.7.

3.7.8 Silence Zone

The silent zone within 1 km of the Protected Area boundary should be clearly defined and strictly enforced, with permissible noise levels of 50 dB(A) during daytime and 40 dB(A) at night. For the entire ESZ beyond 1 km from the Protected Area boundary, the permissible noise levels should be limited to 65 dB(A) during daytime and 55 dB(A) at night, as per the Noise Pollution (Regulation and Control) Rules, 2000. The silence zone is proposed in 1 km from of protected area boundary of STR to preserve the animal habitat and movement in protected area and buffer zone.

3.7.9 Regulatory Framework

To protect the environment several acts, notifications and rules and regulations consists by the legal framework in India. The relative act for roads and other infrastructure can be as Forest (Conservation) Act, 1980 and the EIA notification, 1994. Both acts play crucial roles in decision making for granting forest clearance and implementations.

3.8 MANAGEMENT OF RESOURCE EXTRACTION

STR is rich in natural resources like water, plants and trees, animals and birds and many other natural materials. Extraction of natural resources from Protected area of Satpura Tiger Reserve is prohibited and designated as illegal activity. Collection of Minor Forest Produce are allowed under applicable forest law in certain limitation for livelihood of local community. Prohibited and regulated activities based on resource extraction Annexure 1.2, Chapter 1.2.3, Section 1.2.3.8.

3.9 MANAGEMENT OF HAZARDOUS AND BIO-MEDICAL WASTE

Segregation of recyclable plastic waste should be done at village or cluster level collection point and should be reuse plastic for various purpose or can be sold to the recycler and can generate revenue from it. Single use plastic should be banned in ESZ to reduce plastic pollution in the area.

Non-biodegradable, bio-medical and hazardous waste are to be collected in a separate bin for entire village and should be transported to the nearest landfill site. As ESZ is rich in biodiversity, no landfill sites have been proposed in ESZ area.

3.10 SURFACE AND GROUND WATER WITHDRAWAL

The extraction/storage of surface water is prohibited in Protected Area of Satpura Tiger Reserve. To conserve these much of needs, it is advisable to levy mandatory measures for ground water recharge and rainwater harvesting in study area.

3.11 PROTECTION TO THE SOURCE OF WATER

Rivers like Denwa and Tawa with many streams flows through the STR as potential water source to animals as well as villagers. The region has the Tawa reservoir and Dokrikheda as large potential surface water storage. The area is blessed with approximate rainfall of 1200 mm in the region but lacking to store or utilize the water as run-off because of slope is in high value. The conservation measures to preserve the water resources following suitable methodologies are discussed below.

Surface water

To preserve the surface waterbodies and its surrounding characteristics, a buffer area for waterbodies is proposed. The buffer is also helpful to tackle the floods and improves the ground water level in surrounding area of waterbodies as shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.10.1.

Reservoirs

STR has one reservoir named Tawa reservoir near to Ranipur- Tawanagar village. Tawa Reservoir is recognized as a Ramsar Site, which is a designation given to wetlands of international importance under the Ramsar Convention on 24-08-2024. It serves as an important water source for local communities and plays a key role in maintaining biodiversity in the region. The reservoir's wetlands are crucial for flood control, groundwater recharge, and maintaining water quality. Refer as shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.10.1. The Regulation activity around the Tawa Reservoir is applicable as per Wetland (Conservation and Management) Rules ,2017.

Ground water

Most of the villages have depleting ground water level. Some suggestive Ground water recharge methods are mentioned in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.10.2 and watershed Management Map is shown in Fig. 3-27.

3.12 DEVELOPMENT OF RESILIENCE TO CLIMATE CHANGE

Conventional energy sources like coal, petrol, diesel and wood can damage the local environment. This could result in loss of forest cover and loss of habitat of animals. As STR is covered largely with forest area, it is not possible to establish wind units in large numbers. So, Solar and biogas can be helpful at an extent to reduce the dependencies on conventional fuels.

3.12.1 Promotion of non-polluting Mobility

To reduce air and noise pollution and promote eco-friendly tourism, the introduction of alternative fuel vehicles such as E-bikes and bicycles is proposed in Pachmarhi-key tourist destination within STR. Due to limited local transport options, especially during the popular Pachmarhi festival in December, providing E-vehicles on rent will improve internal mobility for tourists. Refer Annexure 1.2, Chapter 1.2.3, Section 1.2.3.11.1, Fig. 3-28.

3.12.2 Solar Energy

Solar energy can be use in various ways in the villages of ESZ like use of solar water pump for water supply and irrigation purpose in farms, rooftop solar in schools and other government buildings, solar streetlights in the villages, use of solar energy for small commercial or industrial use etc.

3.12.3 Biogas

Biogas offers a cleaner, more sustainable alternative. It uses cow dung and other organic waste, which are readily available in most households with livestock. Biogas plants, whether at the household or community level, are successful in improving health, reducing pollution, and enhancing the quality of life. Refer Annexure 1.2, Chapter 1.2.3, Section 1.2.3.11.4.

3.12.4 Conservation of Night Sky

The analysis for the night sky can be represented with the Bortle Night Sky Scale assesses the quality and suitability of dark night skies. Most of Satpura Tiger Reserve (STR) falls under scale-3, indicating a rural sky site. Some southern and eastern areas of STR may qualify for dark sky designation, transitioning from scale-2 to scale-3 skies. However, Pachmarhi, having large population has bright sky even in night, contributes to bright skies due to high population density. Given this, STR could apply for Dark Sky Reserve designation as shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.11.5, Fig. 3-32.

3.12.5 Measures for pollution control

This dense forest of Satpura helps to eliminate the pollution in region and freshens the air.

- **Establishing PUC Centre:** Monitoring for air pollution is limited to only Pachmarhi and Tawanagar. Tawanagar does not have regular monitoring for air pollution. By considering the tourist footfall, total 7 numbers of PUC Centres are proposed as shown in Annexure 1.2, Chapter 1.2.3, Section 1.2.3.11.6, Fig. 3-33.
- **Measures for water pollution:** The sample for water pollution measurements shall be collected with random sites for regular time intervals. The suggestion for regular at least in 1 year before and after rainfall sample should be collected and analysed for waterfall sites with Lakes, rivers nearby area of settlements, proposed camping sites and accommodation, reservoirs and ponds
- **Measures for Noise Pollution:** To eliminate the noise pollution, the silence zone is proposed in 1 km periphery of Protected Forest area of STR to preserve the animal habitat and movement in Protected area (Fig. 3-34).

4 LIVELIHOOD ISSUES

4.1 STAKEHOLDER CONSULTATION

As a part of the stage baseline assessment - data collection for cluster 4 - ESZ, included the primary data collection which were supplemented with expert and stakeholder consultation of officials, villagers. People who will get affected by this project are the stakeholders such as investors, villagers, concerned government departments etc. Stakeholder consultation is one of the major part of planning process as shown in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.1.

4.2 RURAL ECONOMY

There are five main pillars of economy of rural area of ESZ of Satpura Tiger Reserve i.e., Agriculture, Tasar Farming, Forest, Animal husbandry & Tourism. Agriculture is predominantly major part of rural economy in India. For Satpura Tiger Reserve, villages under Eco Sensitive Zone are mainly tribal villages and all the villages are near to the forest, these people are directly or indirectly dependent on forest produces & traditionally MFP are core part of economy. Also, due to dense forest area and Tiger Reserve, this region is tourist hotspot, in addition, the only hill station of Madhya Pradesh State- Pachmarhi is a major tourist attraction point throughout the year. Animal Husbandry is also one of the important components of rural economy. Strengthening economy of villages is attached in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.2.

4.3 PROMOTION OF ECO-DEVELOPMENT ACTIVITIES

Agriculture, with its allied sectors, is unquestionably the largest livelihood provider in India, more so in the vast rural areas. It also contributes a significant figure to the Gross Domestic Product (GDP). Sustainable agriculture, in terms of food security, rural employment, and environmentally sustainable technologies such as soil conservation, sustainable natural resource management and biodiversity protection, are essential for holistic rural development. Traversed by the sacred Narmada river and its tributaries, Satpura tiger reserve represents rich agricultural land. The soil type of the STR is Shallow black soil and deep black soil. The STR falls into Satpura plateau and in some parts of Central Narmada Valley. Therefore, due to the soil type currently the majorly grown crops in this region are Wheat, makhana and soybean. Minor millets are most important traditional crop in the tribal area of Madhya Pradesh. **kodo millet, kutki millet** are known to have **drought resistance property which can make a region arid and help the poor to strengthen their economy**. Government has launched various schemes for agriculture sector as shown in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.3. Honeybee Farming / Apiculture., Tasar Development, Agro Forestry, Animal Husbandry and Agro-based industries should be promoted in the ESZ. Details about these as shown in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.3.1 – 3.4.

Traditional Crops

Minor millets are most important traditional crop in the tribal area of Madhya Pradesh. This crop is linked with the tribal life and its social, culture and health practices. In the villagers of the Eco sensitive zone belongs to Gond and Baiga tribes the traditional food of this tribe is **Kodo and Kutki millets**. These Millets are the staple food of the tribes from thousands of years.

The Traditional crop centre is to be made at **Pachmarhi/ Matkuli/ Block Headquarter** and it will be headed by Block level officer of agriculture department. The officer will directly in contact with Sarpanch of all villages, NGOs, Private sectors and NRLM/ SRLM staff.

Promotion of Biofertilizer and Biopesticides in Organic Farming- Points

Nishan cluster is situated on the bank of Denwa river and have many natural streams passing through this cluster and merging in Denwa river. Promotion of Kodo and Kutki Millets can also be done through Nishan Cluster. Various food products can be served to the tourists made from Kodo and Kutki millets that will enhance their experience. Haat bazar is in Sangakheda which is approximately 18 km from Nishan. It is one of the largest haat bazar in STR region. A warehouse has also been proposed in Sangakheda to store

the agricultural products. Nishan Cluster-Proposed Model Cluster for Agriculture Development is shown in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.3, Fig 4-4.

Tasar Development

In ESZ of Satpura Tiger Reserve, there are mainly three villages performing tasar farming and mulberry sericulture activities. i.e., Dokrikheda, Chhirrai and Matkuli. Matkuli and Chhirrai villages are facilitated with reeling center in the region. Promotion of Taser farming and mulberry sericulture can be promoted in this area and more reeling centres can be developed in the region that will create employment for villagers. The areas of Dokrikheda, Choka, Madho, Bori, Raitwadi, Amadeh, Ghoghri Matha, and Maharajganj villages are considered moderately suitable and least suitable for Tasar and Mulberry farming. Suggestive Proposed area for promotion of Tasar farming and Mulberry farming is shown in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.3.2.

4.4 AGRO INDUSTRIES

Agro-based industries are those industries which have either direct / indirect link with agriculture. Industries which are based on agricultural produce and industries which support agriculture come under agro-based industries. Refer Annexure 1.2, Chapter 1.2.4, Section 1.2.4.4.

4.5 HOUSEHOLD INDUSTRIES THROUGH SHGs:

The public sector and NGOs as well as private entrepreneurs play an important facilitating role in developing linkages between agro-industry and farmers. This role may include organizing farmers or assisting NGOs or private enterprises to take on responsibilities previously discharged by states, providing credit, assisting with inputs, providing information on technology and ensuring that contract requirements are met. In this way, the public sector, NGOs, and private entrepreneurs are helping directly to create beneficial linkages between agro-industry and farmers and indirectly creating other linkages between the farm and non-farm sectors.

Household industries are mostly dependent on availability of raw material or resources. Household industries are one of the most important parts of resource-based industries. Area of Eco Sensitive Zone of Satpura Tiger Reserve has a tremendous potential to develop household industries. As mentioned in above topics, there are number of forest products, agricultural products available in the region. Using that as a raw material, household industries can be develop that can generate employment in rural area and will generate side income for community. There are some government schemes and programs are going on for promotion of household industries in rural area and specially for tribal communities as shown in Annexure 1.2, Chapter 1.2.4, Section 1.2.4.4.1.

Under National Rural Livelihood Mission and State Rural Livelihood Mission, SHGs have been formulated in villages. NRLM and SRLM both can promote household industries in collaboration with NGOs and other private sectors for packaging, manufacturing and other type of industries. In addition, NGOs and other private sectors can provide training and resources through SRLM centres under super vision of Block managers of RLM centres.

4.6 AGRO BASED TOURISM

It is a part of the Ecotourism as it is related and subject to natural attractions. Both are described as forms with a rapid development of tourism. These forms are more marked in developed countries, conducting as models of potential development of natural resources and economic support of local society. Refer Annexure 1.2, Chapter 1.2.4, Section 1.2.4.4.2.

The sustainability of agro based tourism on the “health” of rural environment derives from the fact that this activity cannot be dissociated from the economic, social and cultural life of the community. Between tourism and environment there is a close relationship based on:

- The environmental elements considered to be tourist attractions.
- Facilities and tourism infrastructure.
- The impacts generated by tourism development and tourist use on the environment and settlements.

In rural areas, farmers often engage in multiple sectors to diversify income, as agricultural earnings alone may be insufficient. Increasing demand for tourism has become a significant source of income, with agro tourism growing rapidly as tourists seek unique experiences. Agro tourism combines agricultural activities with tourism, offering new opportunities for farmers to enhance their income and improve their quality of life. It educates the public about agriculture, boosts local economies, reduces urbanization by creating jobs, and promotes local products through direct marketing. It also stimulates economic activity and contributes to rural development by increasing revenue, creating jobs, fostering exchanges between rural and urban areas, and improving local infrastructure.

5 ECOTOURISM, INTERPRETATION AND CONSERVATION EDUCATION - SUB-ZONAL TOURISM MASTER PLAN

Madhya Pradesh offers a variety of tourism experiences, from historical and spiritual sites to natural attractions and wildlife destinations. STR is the part of central highlands of India with consisting places of natural beauties of landscapes, availability of vast range of flora and fauna, ancient religious places and rock paints. STR has potential to be developed as tourist destination with having offer something to every visiting person.

5.1 EXISTING TOURISM FACILITIES AND ASSETS OF TOURISM DEPARTMENT

Madhai and Pachmarhi are popular tourism destination of Satpura Tiger Reserve. Natural Beauty of Pachmarhi attracts the tourists during all the year and the dense jungle and diverse wildlife of Madhai provides a mesmerising experience. The tourism infrastructure such as accommodation are shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.1, Fig. 5-1. Tourism Department assets are shown in Fig. 5-2.

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.

5.2 TOURIST ZONES

STR has the flourishing tourism and many potential sites to develop as unexplored tourist site. STR is divided into 5 tourism zones and 9 clusters as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3, Fig. 5-5. The tourism zones are created on basis of primary tourism activities in region; other eco-tourism activities will be as supporting activities in region.

Satpura Tiger Reserve has the flourishing tourism and many potential sites to develop as unexplored tourist site. On basis of Tourism sites, profile of area and primary tourism in areas, it is divided in tourism zones. These zones are further divided in tourism clusters with having proposed activities or enhancement in existing activities in the cluster based on tourism zone.

5.2.1 Wildlife Tourism Zone

Satpura Tiger has core wildlife safaris in Madhai, Churna, Mallupura, panaarpani and buffer wildlife safari is ongoing in Paraspani Jamanidev, Bargondi, Tamia and Delakhari area. In Paraspani Cluster, an interpretation center and nature museum should be proposed to aware people about forest and history of forest in Mangaria village and Sarangpur village. Bargondi Cluster has undulating terrain which is suitable to adventure activities as well as nature walk. At distance of 1 km there is a Sangam Kund in protected area from which a nature trail to Bargondi is proposed. Details are shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.1.

5.2.2 Eco- Tourism Zone

Satpura Tiger Reserve has potential spots to develop the eco-tourism activities in region of Dhasai cluster, Bandhan Cluster and Pisua Cluster. Nature Trail, Bird watching and nature exploration with walking and camping is proposed in eco-tourism zones. Proposed Eco-tourism zones and clusters as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.2.

5.2.3 Tourism Activity Zone

Dokrikheda dam and Twanagar is proposed for multiple recreational activities like boating, floating market, Parks and picnic points, flower garden and many more. The place has potential to be developed as weekend destination. Proposed recreational tourism zones as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.3.

5.2.4 Rural Tourism Zone

Rural tourism can be promoted in the area. In Nishan village a thematic cultural park is proposed in which the culture of tribal can be experienced by the tourists various cultural and economic activities. Rural Tourism zone as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.4.

5.2.5 Nature Tourism Zone

Satpura Tige Reserve is the biodiversity hotspot of central India with having different type of flora fauna, suitable landscape, rivers and streams. The natural beauty of STR is majorly can be experienced from Pachmarhi, because of its high altitude and landscape. The other way to explore the STR is Baruth & Alimod located amidst variety of landscape with dense forest. Nature tourism Zones as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.5.

5.3 SUGGESTIVE MEASURES FOR USE OF ECO-FRIENDLY MATERIAL AND VERNACULAR ARCHITECTURE

The suggested measures for the construction or upgradation of hotels and resorts in the ESZ involve using eco-friendly, locally available materials. These materials include cob, clay bricks, recycled glass, recycled plastics, and plant-based roofing, as detailed in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.8.

Incorporating vernacular architecture in ESZ hotels around Satpura promotes eco-friendly and culturally rich tourism by blending modern comfort with local heritage and ecological balance. To enhance tourism activities in identified tourist sites, various types of tourism can be promoted based on tourism zones and their clusters, as explained in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.3.8.

5.4 ENHANCEMENT OF TOURISM ACTIVITIES IN IDENTIFIED TOURIST SITES

5.4.1 Nature Trails

Nature Trails are best way to explore the nature by walking in forest, acknowledging about flora fauna and taking experience to wander in forests. STR has very dense and bio-diverse forest. Proposed nature trails are for Bargondi, Satdhara, Bandhan-Dahelia, Alimod & Dhasai. All locations have advantage of forest and waterbody both. All locations are shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.4.1.

5.4.2 Camping, adventure activities, Rural Tourism and Late Evening Safari

Camping offers an immersive nature experience amidst rivers, mountains, and wildlife. The suggestive proposed camping sites are Ranipur, dokrikheda, bargondi, dahelia, bandhan, Nishan, Kurrai and Burath are shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.4.2.

Adventure Activities are Proposed at Bargondi, Sarangpur, Mangaria, Baruth and Chaurasi baba Temple area. These activities are mainly forest based adventures. Madhai and Mangaria are on flat terrain, while Bargondi and Chaurasibaba has hilly terrain. These areas can be developed as adventure zone with the required infrastructure are shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.4.3. The activities like ATV Riding, Burma Bridge, cycling, Multi Vine, Ladder Climbing, River Rafting, Boat Keoning and Human Slingshot etc.

Rural tourism is distinctive to its locality; the foods, products and landscapes have been shaped by generations, providing opportunities to create authentic appealing experiences for visitors that allow local communities to celebrate and take pride in their culture.

Late Evening safari is a romanticizes experience with dense forest in night. Late Evening Safari is ongoing in Satpura Tiger Reserve in areas of Bargondi, Jamanidev and Parsapani. The proposed locations for stargazing are Chaurasibaba Temple, Pathai, Bargondi, Handi kho and Pachmarhi as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.4.4.

Location of Chaurasibaba and Handi Kho are on heights and provides the beautiful landscape view of Satpura Range along with late evening sky. Pathai and Bargondi are the part of Safari, which provides the wildlife experience as well as jungle late evening safari along with stargazing. Kuraii is in the lap of Satpura Mountain Range, provides the direct touch with nature and camping along with stargazing.

5.5 CONSERVATION OF TOURIST SITES

STR have archaic heritage structures of stepwell of Rani near Ranipur, Arjungufa near Karer, 2 Rock paintings near Mahadeo Gufa and Bagum Palace at Pachmarhi. These siters are in deteriorating condition and requires restoration. The restoration and conservation of these manmade heritage sites to be done by Directorate of Archaeology, Archives and Museums.

5.6 LOW IMPACT TOURISM ACTIVITIES

Low-impact tourism activities are designed to minimize environmental damage and promote sustainable travel. These zones are designated to protect and conserve biodiversity, wildlife habitats, and ecosystems around national parks, wildlife sanctuaries, and protected areas. Some low-impact tourism activities are Nature Walks and Birdwatching, Camping (Low-Impact, Eco-Friendly), Cultural Tourism and Heritage Walks, Wildlife Photography (Non-Intrusive), Sustainable Agriculture Tourism (Agro Tourism), River Rafting and Canoeing (Eco-Friendly) and Herb and Medicinal Plant Tours as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.6.

5.7 CONNECTIVITY LINKAGES

Connectivity is key to boost tourism in STR. Statues, artwork, Cultural Monuments and Stories and Paved walkway can be proposed. The lake front Development walkway and food street market is proposed at Dokrikheda as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.7. Linkages are proposed on regional as well as local level to provide better connectivity in STR as discussed in 11.7.1.

5.8 INFRASTRUCTURE

Infrastructure is essential for developing tourism sites to enhance the visitor experience. On-site infrastructure should include e-toilets, water fountains, standposts, signages, dustbins, and changing rooms. The proposed infrastructure is outlined in as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.8.

Accommodation

Commercial hotels are proposed in Matkuli as it can be developed as counter magnet to Pachmarhi. There is no accommodation for tourist is provided in Alimod and Baruth cluster apart from camping. The proposed Accomodation is proposed in Ranipur-Tawanagar, Mangaria, Kharpawad, Sarangpur, Tekapur Chaurmarhi, Pisua and Mehendikheda, Matkuli, Bhargondi, Bandhan, Sangakheda, Dhasai and Bardha.

5.9 PROMOTION OF TOURISM IN STR

Tourism promotion leverages advertisements across media like TV, print, and digital platforms to attract visitors, with medium choice based on budget and goals. In Satpura, experience-based promotions via bloggers, training hubs, exhibitions, destination weddings, and events like photography contests and marathons enhance regional appeal and brand visibility. Promotion can be done through Trainings, Exhibitions and Gatherings as shown in Annexure 1.2, Chapter 1.2.5, Section 1.2.5.10.

6 RESEARCH, MONITORING AND TRAINING

6.1 PRIORITIZATION OF RESEARCH AND MONITORING

Biodiversity have been unique in these areas of Bhatodi and Chicha as it has been undisturbed. The animal movements can also be observed. The area of Chicha and Bhatodi are proposed for research locations. Other than that, Pachmarhi and Bargondi can be potential site as it has biodiversity and uniqueness in area for research and conservation work on forest and biodiversity. The research work requires the permission from STR and Non-objection certificate from state biodiversity board. The suggestive proposed locations are Bhatodi, Chicha, Pachmarhi and Bargondi.

6.2 DEVELOPMENT OF HUMAN RESOURCES FOR IMPLEMENTATION OF PLAN AND SKILL DEVELOPMENT

Training is an integral part for capacity building. Training program regarding to generate skilful labour for tourism, conservation and forest protection as well as maintaining infrastructures are suggested based on provided proposal in ESZ area. Training for conservation measures and upgradation of technology should be provided as per necessity to increase the work efficiency and enhancement of knowledge. Proposed Training programs as shown in Annexure 1.2, Chapter 1.2.6, Table 6-1.

7 PERMISSIONS, ORGANIZATION AND ADMINISTRATION

The process for issuing permissions within the ESZ is governed by the provisions outlined in the ESZ Zonal Master Plan. Permissions are categorized into two types of activities: regulated & promoted activities and prohibited activities. In accordance with the guidelines set forth in the ESZ Master Plan, the regulatory authorities will issue permissions for regulated and promoted activities after receiving recommendations from the Monitoring Committee. Permissions will be granted only for activities that are not prohibited, in accordance with the guidelines outlined in the ESZ Zonal Master Plan. If an activity is not specifically mentioned in the ESZ Master Plan, the regulatory authorities will grant permission based on the recommendations provided by the Monitoring Committee.

The guidelines were formulated based on the discussions held during the Inter-departmental meetings. These guidelines for development within Eco-Sensitive Zones (ESZ) are designed to balance conservation and community needs, ensuring that local ecosystems are preserved while supporting responsible development. Development will be restricted in areas within 1 km from Protected Area boundary (no new commercial construction is allowed), regions with hill slopes over 20 degrees, conservation zones around water bodies, in the tiger corridors, and locations of religious significance. Specific locations related to land use are not provided; only suggestive locations are indicated for all the proposals in the ESZ Zonal Master Plan.

No new commercial construction activities within 1 km from protected area boundary: There is no new commercial construction of new hotels and resorts is allowed within the 1 km from the boundary of the protected area. However, the renovation and reconstruction of existing hotels and resorts area allowed in ESZ area. Refer Gazette Notification No. 2538 E, dated 9 August 2017 was published by The Ministry of Environment, Forest and Climate Change (MoEFCC), Refer Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2-3.

Activities allowed in steep slopes areas: In areas with steep slopes greater than 20 degrees, only few activities will be allowed to ensure conservation. Local residents will be permitted to undertake construction on their land for residential purposes. Additionally, the widening and strengthening of existing roads, as well as the construction of new roads, will be allowed to improve connectivity. The construction and renovation of infrastructure and civic amenities will also be permitted to meet the community's needs. Ongoing regulated and promoted activities in these slope areas will be allowed to continue. However, all other activities, including industries, home stays, new commercial ventures, hotels, and resorts, will be strictly prohibited in these sensitive areas to protect the environment and prevent further degradation of the slope as shown in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2-5.

Permissible Activities around water buffer area: Uniform guidelines have been established to define buffer zones around water bodies, which will function as riparian zones for conservation purposes. Within these buffer areas, only conservation activities, agriculture, and allied practices will be permitted. All other activities will be prohibited to protect the ecological balance. A minimum of 50 meters will be maintained from the HFL or FRL of large rivers and lakes, while a minimum of 15 meters will be required as a buffer from the edges of smaller water bodies such as ponds and streams. Refer Fig. 10-5. These guidelines ensure the preservation and sustainable management of water resources in the region as shown in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2-4.

Guidelines for development in and around tiger corridor:

As per the National Tiger Conservation Authority's guidelines for tiger corridors, residential construction is allowed on abadi land and within a 100-meter buffer, In non- Abadi land, residential construction is allowed with FAR restriction of 0.1. Widening and strengthening of existing roads, as well as new road construction, are permitted. Infrastructure and civic amenities can be constructed or renovated. However, new commercial construction is prohibited. Tiger corridor is shown in Annexure 1.2, Chapter 1.2.2, Section 1.2.2.3, Fig. 2-6.

Guidelines for the development of Temple in steep slopes and 1 km from protected area:

The religious sites located within 1 km from the protected area and on the hill slopes, the regulation criteria is clearly defines that development will be allowed only to existing conditions for temple development only. No new commercial structure and no expansion commercial structure allowed in the religious place located in steep slope and 1 km from the protected area.

7.1 STRUCTURE AND RESPONSIBILITIES

The monitoring on the development activities in the Eco-Sensitive area around Satpura Tiger Reserve will be under regulatory authorities such as local bodies, Revenue department, Pollution Control Board and Forest department. These regulatory authorities will be monitoring in terms of permission of regulatory activities as mention in the Gazette Notification. List of Regulatory activities under Regulatory Authority are mentioned in Annexure 1.2, Chapter 1.2.7, Table 7-1. Development, Conservation and Restricted Areas in ESZ is shown in Fig. 7-1.

Sl.No	Regulated Activities	Regulatory Authority
1	Commercial establishment of hotels and resorts	Revenue Department, Forest Department and Local Body
2	Construction activities	Revenue Department, Forest Department and Local Body
3	Small scale non polluting industries	Revenue Department and Local Body
4	Comercial Goat and sheep farming	Revenue Department and Local Body
5	Felling of Trees	Revenue Department, Local Body and Forest Department
6	Goat Farming	Local Body
7	Collection of Forest Produce or Non-Timber Forest Produce (NTFP)	Local Body
8	Migratory graziers	Local Body and Forest Department
9	Erection of Electrical and communication towers and laying of cables and other infrasrtucture	Revenue Department, Local Body and DISCOM
10	Infrastructure including civic amenities	Revenue Department, Forest Department and Local Body
11	Widening and Strengthening of existing roads and construction of new roads	Revenue Department, Forest Department and Local Body
12	Undertaking other activities related to tourism lie over flying the ESZ area by hot air balloon, helicopter, drones, microlites	Revenue Department, Forest Department and Local Body
13	Protection of Hill slopes and river banks	Local body and Collector
14	Movement of Vehicular Traffic at night	Local body, Forest Department
15	Ongoing agriculture and horticulture practices by local communities along with dairies, dairy farming, aquaculture and Fisheries	Local Body
16	Discharge of treated waste water /effluents in natural water bodies or land area	Local Body and MPPCB
17	Commercial extraction of surface and ground water	Local Body, WRD, CGWA, Collector
18	Open well, Bore well etc for agriculture or other Usage	Local body and Collector

19	Solid Waste Management/Bio-medical Waste Management	Local Body., CMHO, MPPCB, Health Department
20	Introduction of Exotic Species	Local Body, Collector, Forest Department
21	Eco-Tourism	Local Body, Tourism Department, Forest Department
22	Commercial Sign boards and hoardings	Local Body, Transport Department, Forest Department
23	Noise Pollution	Local Body, MPPCB and district administration

As per the ESZ Zonal Master Plan, the regulatory authority, based on the monitoring committee's recommendations, will approve regulated and promoted activities. No permission will be granted for Prohibited activities.

8 PHASING

8.1 PHASE WISE PRIORITY OF PROPOSALS

Approach for cluster-based proposals in Zonal Master Plan for Eco-Sensitive Zone of STR is considered due to large extent of the area. Total Eco-sensitive Zone area is divided in 14 clusters as per their natural boundaries, characteristics, livelihood and many other factors for proposed development activities like tourism, livelihood and conservation proposals. In below section, the priorities for the proposals are provided in short term (0-7 years), Medium term (7-14 years) and long term (more than 14 years). The priority for the same is suggested with consideration of following parameters:

1. Existing importance of area (i.e. tourism, livelihood activities, etc.)
2. Available infrastructure
3. Potential for development and need of conservation measures
4. Inter-dependencies of the proposals

8.1.1 Phasing interventions for tourism activities

STR has vast opportunities for the tourism. The priorities for tourism activities are decided based on the existing tourism activities, infrastructure, and potential for development. The brief phasing for the activities is shown in Annexure 1.2, Chapter 1.2.8, Section 1.2.8.1.1, Table 8-1.

8.1.2 Phasing interventions for Development and Conservation Proposals

Development activities like livelihood through Traditional cropping, Apiculture development, Agro-forestry and various value addition for MFPs along with conservation process like ground and surface water protection, Conservation of Dark sky and many more are long term process. These activities are proposed as per the existing schemes and may take time for development. These activities are considered as continuous development throughout all phase of Zonal Master Plan. The phasing for the activities for development and conservation are as shown in Annexure 1.2, Chapter 1.2.8, Section 1.2.8.1.2, Table 8-2.

8.1.3 Phasing Interventions for Infrastructures

The priority of infrastructure development in notified villages are based on the activities proposed in the cluster. Village wise priority for infrastructure development is as Annexure 1.2, Chapter 1.2.8, Section 1.2.8.1.3, Table 8-3.

8.2 SOURCE OF FUNDING AND DRAWING AND DISBURSING MECHANISM

Source of Funding and Drawing and Disbursing Mechanism is shown in Annexure 1.2, Chapter 1.2.8, Section 1.2.8.2, Table 8-4.

9 CONCLUSION

The Zonal Master Plan and Sub-Zonal Tourism Master Plan for the Eco-Sensitive Zone of Satpura Tiger Reserve present a comprehensive and visionary framework for sustainable development and conservation. By integrating well-defined objectives, strategic land-use planning, and eco-friendly guidelines, the plan ensures a balanced approach to preserving the region's rich biodiversity while fostering socio-economic growth.

Through regulated development, promotion of eco-tourism, and community-focused initiatives like skill development and livelihood opportunities, the plan minimizes environmental impact while enhancing the quality of life for local communities. The emphasis on eco-restoration, resource management, and low-impact tourism activities further strengthens the commitment to safeguarding natural habitats and wildlife.

With robust monitoring, stakeholder collaboration, and innovative infrastructure proposals, the plan sets a strong foundation for sustainable progress, ensuring that Satpura Tiger Reserve remains a thriving ecological and cultural treasure for future generations.