TIGER CONSERVATION PLAN
NAGARJUNASAGAR SRISAILAM TIGER RESERVE
(2023-24 to 2032-33)

VOLUME III
CORRIDOR AREA



ANDHRA PRADESH FOREST DEPARTMENT

GOVERNMENT OF ANDHRA PRADESH

TIGER CONSERVATION PLAN
NAGARJUNASAGAR SRISAILAM TIGER RESERVE
(2023-24 to 2032-33)

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FOREWORD

The Nagarjuna Sagar Srisailam Tiger Reserve (NSTR), one of India's premier tiger conservation areas, is proud to present its Tiger Conservation Plan (TCP) for 2023-24 to 2032-33. This plan embodies our commitment to conserving the entire biodiversity of the landscape, with tiger as an umbrella species.

The TCP outlines a comprehensive approach to protect and manage Core/Critical Tiger Habitat, management of Buffer zone, Conservation of corridors for tiger movement and genetic exchange, Enhance tiger populations within and beyond protected areas.

Our goal is to ensure a thriving tiger population, coexisting with local communities, while maintaining ecological balance. This plan is a roadmap for stakeholders, including government agencies, conservation organizations, and local communities, to work together towards a common conservation objective.

I am confident that this TCP will guide NSTR's conservation efforts, contributing to Andhra Pradesh's and India's tiger conservation goals.

I compliment the entire officers & staff of Project Tiger, Nagarjunasagar Srisailam Tiger Reserve for bringing out well written Tiger Conservation Plan.

Dr. P.V. Chalapathi Rao, IFS.,

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Abbreviations

ABO	Assistant Beat Officer
AC	Acres
ACF	Assistant Conservator of Forests
APCCF	Additional Principal Chief Conservator of Forests
CA	Compensatory Afforestation
CAMPA	Compensatory Afforestation fund Management and Planning Authority
CCF	Chief Conservator of Forests
CF	Conservator of Forests
DCF	Deputy Conservator of Forests
DD	Deputy Director
DPAP	Drought Prone Areas Programme
DyRO	Deputy Range Officer
EC	Environmental Clearance
EEC	Environmental Education Centre
ESZ	Eco-Sensitive Zone
EMC	Environment Maintenance Charges
FBO	Forest Beat Officer
FC	Forest Clearance
FCA	Forest Conservation Act
FD	Field Director
FRA	Forest Rights Act
FRH	Forest Rest House
FRO	Forest Range Officer
FSI	Forest Survey of India
GIS	Geographic Information System
GPS	Global Positioning System
GBM	Gundla Brahmeshwaram Wildlife Sanctuary
GC	Green Cess
HA	Hectare
HoD	Head of Department
HoFF	Head of Forest Force
IUCN	International Union for Conservation of Nature
JFM	Joint Forest Management
MoEF & CC	Ministry of Environment and Forests & Climate Change
MoU	Memorandum of Understanding
MM	Millimetres
MSL	Mean Sea Level
NHAI	National Highway Authority of India
NSTR	Nagarjuna Sagar Srisailam Tiger Reserve
NSCL	Nallamala-Sheshachallam Corridor Landscape
PA	Protected Area
PCCF	Principal Chief Conservator of Forests
PF	Protected Forests
RF	Reserved Forests
RoFR	Recognition of Forest Rights
SFDs	State Forest Departments
SFM	Sustainable Forest Management
SOI	Survey of India
SRBC	Srisailam Right Bank Canal
STFP	Special Tiger Protection Force
TCP	Tiger Conservation Plan
VSS	Vana Samrakshana Samithi
WII	Wildlife Institute of India
WWF	World Wildlife Fund
WLS	Wildlife Sanctuary
WHS	Water Harvesting Structures
MP	Management Plan
ZI	Zone of Influence

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Last but not the least, I would like to thank my Project Tiger Circle and Division office staff for all the support for compilation of required data which helped us in preparation of this plan.

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EXECUTIVE SUMMARY

The Management Plan is for a period of 10 years from 2023-24 to 2032-33. It is with a deep sense of responsibility and urgency that I present this comprehensive Tiger Conservation Plan for the period 2023-24 to 2032-33. The purpose of this plan is to address the long-term conservation of tiger populations and their habitats and to outline a strategic framework for their conservation and sustainable management. It is against this backdrop that we have formulated this ten-year (10) Tiger Conservation Plan. This plan is designed to address the multifaceted challenges faced by tigers and their habitats through a holistic and collaborative approach. It outlines a set of ambitious, yet attainable goals, strategies, and actions aimed at ensuring the survival and recovery of tiger populations across NSTR and the larger Eastern Ghats Landscape. This is the fourth Tiger Conservation Plan that is being prepared for NSTR and its surrounding areas.

The vision of the plan is "to enhancing the protection of tigers in their natural habitat in perpetuity and earmark inviolate & undisturbed spaces for their healthy existence." Given the fact that tiger numbers are on the rise, special and a more detailed strategy has been formulated towards dispersing tigers into corridor area.

The name of this Corridor Management Plan is Nagarjunasagar Srisailam Tiger Reserve (NSTR) to Sri Venkateshwara National Park of Seshachalam Hills. This management plan has been prepared with the objective of establishing a viable corridor for the Tiger source populations of NSTR to Seshachalam Hills of SV National Park. The length of the corridor between Nagarjunasagar Srisailam Tiger Reserve (from the southern tip of the extended core of Gundla Brameshwaram Wildlife Sanctuary) to the Seshachalam Hills of Sri Venkateswara National Park is about 140 km. The entire corridor passes through the Reserve Forest area and Protected Areas, which have been mentioned in the table below. The width of the corridor ranges from 1 km to about 17 km in Veligonda hills. The corridor passes through the Giddalur and Nandyal Divisions of Project Tiger Circle, Nandyal, Kadapa Division of Kurnool Circle and Annamayya and Tirupathi Divisions of Tirupathi Circle and Palnadu, Guntur and Nellore Divisions of Guntur circle. The total area of the Corridor area arrived at 9689.40 Sq km (7314.54 Sq km + 2021.24 Sq km), including four (4) Wildlife areas (2021.24 Sq km) such as Sri Lankamalleswara WLS (464.42 Sq km), Sri Penusila Narasimha WLS (1030.85 Sq

km), Sri Venkateswara National Park (353.62 Sq km) and Sri Venkateswara Wildlife Sanctuary (525.97 sq km).

In the recent past, tigers have been reported from Sri Lankamalleswara Wildlife Sanctuary (hereinafter referred to as *Lankamalla*), Palnadu District, Marripadu/Udayagiri areas of Atmakur (Nellore) Range in Nellore District, and the Kalyani Dam site of SVNP in Tirupati. Tigers have also been reported breeding in the Rudravaram Range of Nandyal Division and the Porumamilla Range of Kadapa Division, which have been proposed as part of the buffer areas. NSTR, along with GBM, serves as the main source population for tigers dispersing into the adjoining landscape, making the Nallamala–Sheshachalam Corridor Landscape (NSCL) critically important for tiger conservation in India.

The plan emphasizes the need for habitat protection and restoration, strict anti-poaching measures, effective water resource management, and robust community engagement. It also underscores the importance of addressing Human–Wildlife Conflict through innovative and sustainable solutions, while recognizing the rights and needs of local communities and ensuring the safety of both humans and tigers. Special focus is placed on mitigating anthropogenic pressures from pilgrims visiting Srisailam by introducing the concept of a "Green Pilgrimage," which aims to study the impact on wildlife, develop strategies to minimize disturbances, and establish long-term solutions to this ever-increasing threat. Additionally, a comprehensive fire management plan has been formulated to ensure the protection of habitats and micro-fauna.

As part of the habitat improvement theme, the Plan proposes measures such as water resource management, grassland development and restoration, and reducing human disturbances within critical habitats. Key initiatives include implementing safeguards for wildlife along highways and formulating a comprehensive anti-poaching strategy to ensure the long-term protection of the ecosystem.

The management objectives outlined for the corridor areas aim to enhance landscape connectivity and promote sustainable wildlife conservation while simultaneously addressing the needs of local communities. The tiger corridor has been delineated using two complementary approaches: the Least-Cost Path (LCP) method and the Circuit Scape model. The Least-Cost Path method, widely used in Geographic Information Systems (GIS) and spatial analysis, identifies the most efficient movement routes

between two points based on a defined cost surface. In contrast, the Circuit Scape model analyses multiple potential pathways and identifies areas of high connectivity, thereby highlighting potential corridors between the start and end points.

The identified corridors were assessed for both structural and functional connectivity to evaluate their effectiveness in facilitating wildlife movement. Fragmentation of corridors has been recognized as a major threat to connectivity; however, this can be mitigated by identifying weak links and implementing targeted measures to strengthen them. The overarching management objectives focus on the protection, restoration, and long-term conservation of wildlife populations and their habitats within the corridor landscape.

The protocol of NTCA from Phase I to Phase IV are mentioned. In addition, a detailed plan for the yearly monitoring and research of tigers, co-predators, and prey species has been provided. This includes methodologies such as capture-recapture using camera traps, line transect surveys for estimating animal density, and indirect sign surveys for assessing habitat usage.

The plan emphasizes the importance of continuous improvement and the augmentation of staff strength to ensure effective implementation. Training and capacity-building workshops have been proposed at regular intervals for staff members, focusing on aspects of enforcement, monitoring, and research to enhance their skills and efficiency.

The success of this Tiger Conservation Plan depends on the collaborative efforts of the Andhra Pradesh Forest Department, other government departments, conservation organizations, local communities, NGOs, and concerned citizens. It calls for a collective commitment to support and implement conservation actions that prioritize the long-term survival of tigers and the ecological integrity of their habitats.

TIGER CONSERVATION PLAN: CORRIDOR AREA



CHAPTER-1
Introduction of the Area

The name of this corridor management plan is Nagarjunasagar Srisailam Tiger Reserve (NSTR) to Sri Venkateshwara National Park of Seshachalam Hills. This management plan has been prepared with the objective of establishing a viable wildlife corridor to facilitate the movement of tiger source populations from NSTR to the Seshachalam Hills of SV National Park.

The length of the corridor between Nagarjunasagar Srisailam Tiger Reserve (from the southern tip of the extended core of Gundla Brameshwaram Wildlife Sanctuary) to the Seshachalam Hills of Sri Venkateswara National Park is about 140 km. The entire corridor passes through the Reserve Forest area and Protected Areas, which are mentioned in the table below. The width of the corridor ranges from 1 km to about 17 km. The corridor passes through the Giddalur and Nandyal Divisions of Project Tiger Circle, Nandyal; Kadapa Division of Kurnool Circle; and Annamayya and Tirupati Divisions of Tirupati Circle; as well as Palnadu, Prakasam, and SPSR Nellore Divisions of Guntur Circle. The total area of the corridor has been estimated at 9689.40 sq. km (7314.54 sq. km + 2021.24 sq. km), including three (3) Wildlife Sanctuaries (2021.24 sq. km), Sri Lankamalleswara WLS (464.42 sq. km), Sri Penusila Narasimha WLS (1030.85 sq. km), and Sri Venkateswara National Park (525.97 sq. km). The areas of the respective divisions falling in the corridor are as follows:

Table 1 - Division-wise areas falling in the Corridor of NSTR & Seshachalam Hills

Sl. No.	Circle	Division	No. of CPTs	No. of Beats	No. of Sections	No. of Ranges
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Project Tiger Circle, Nandyal	Nandyal	83	9	4	1
2	Kurnool	YSR Kadapa	291	46	10	5
3	Tirupati	Annamayya	397	43	17	6
4		Tirupati	72	16	7	4
5	Guntur	SPSR Nellore	136	19	8	3
		Prakasam	88	7	4	1
		Palnadu	55	15	6	2
	Grand Total		**1122**	**155**	**56**	**22**

A number of terms such as 'habitat corridor', 'movement corridor', 'wildlife corridor', or 'dispersal corridor' have been used in scientific literature, and, indeed, even the term 'corridor' has been defined in a variety of ways. Different definitions can imply different habitat structures or forms of use, so it is not always clear what is meant. We have chosen to use the terms 'link' or 'linkage' as general terms to minimize this uncertainty and to emphasize that connectivity can be increased by a range of habitat configurations, not only by corridors. For clarity, the use of terms in the remaining chapters of this plan is as follows.

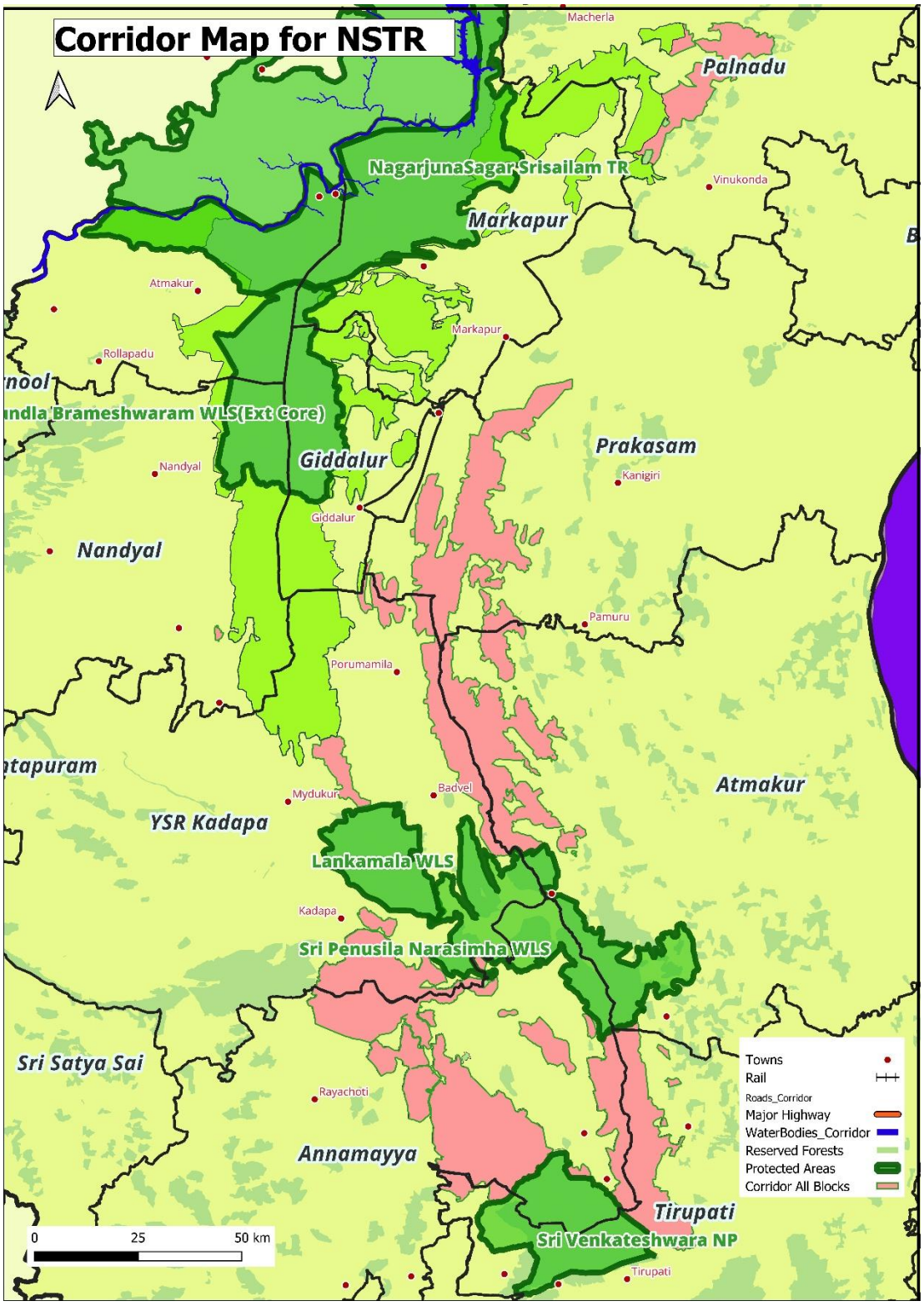
- **Link, linkage:** General terms referring to an arrangement of habitat (not necessarily linear or continuous) that enhances the movement of animals or the continuity of ecological processes through the landscape.
- **Linear habitat:** A general term referring to a linear strip of vegetation. Linear habitats are not necessarily of indigenous vegetation and do not necessarily provide a connection between two ecological isolates.
- **Habitat corridor:** A linear strip of vegetation that provides a continuous (or near continuous) pathway between two habitats. This term has no implications about its relative use by animals.
- **Landscape linkage:** A general term for a linkage that increases connectivity at a landscape or regional scale (over distances of kilometers to tens of kilometers). Typically, such linkages comprise broad tracts of natural vegetation.
- **Stepping-stones**: One or more separate patches of habitat in the intervening space between ecological isolates, that provide resources and refuge that assist animals to move through the landscape.

Some Corridor Types:

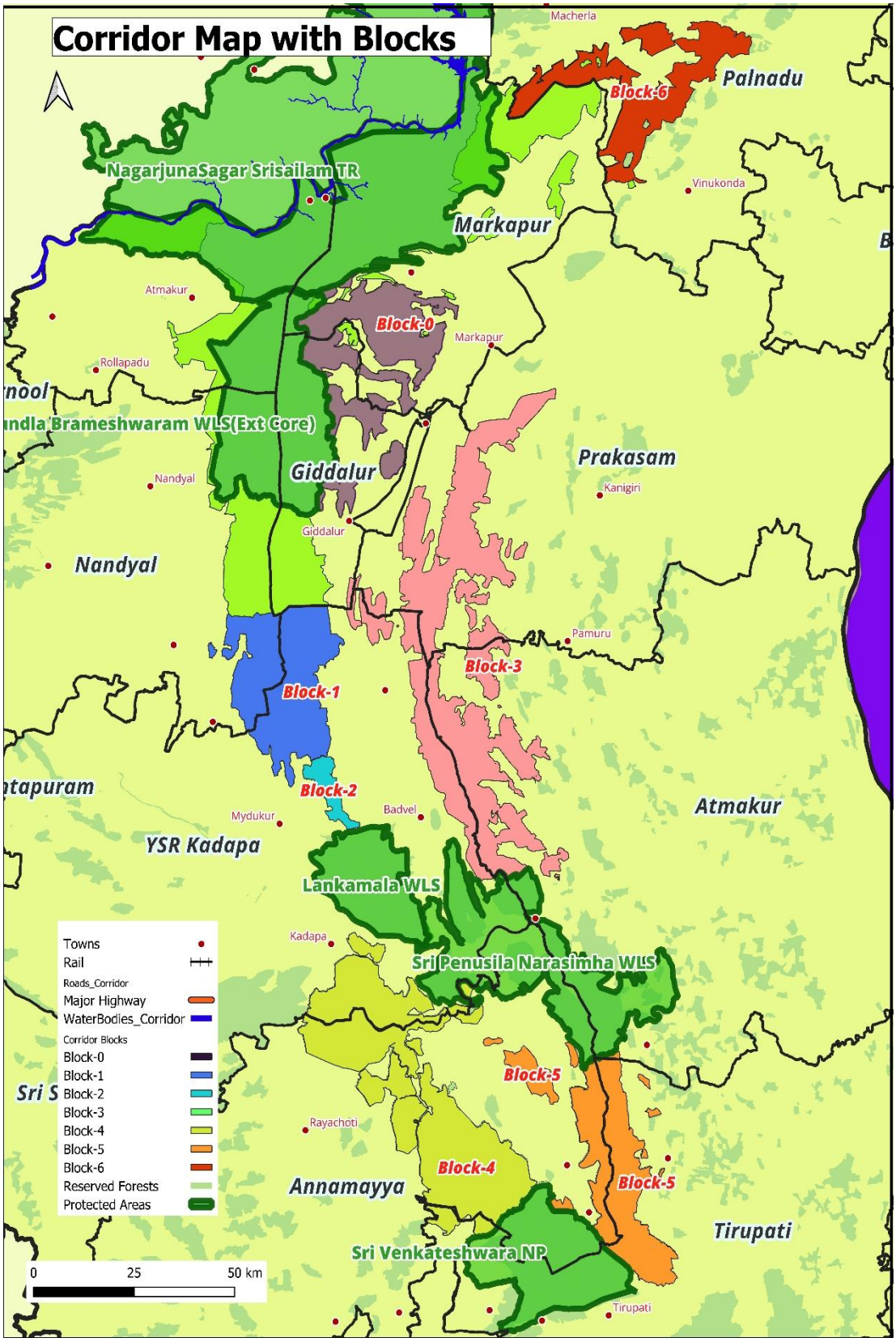
- **Core Corridors:** These primary pathways connect large, intact habitat patches or protected areas. Core corridors often serve as main thoroughfares for wildlife movement, including tigers, and may span significant distances across landscapes.
- **Peripheral Corridors:** Peripheral corridors are smaller, secondary pathways that connect peripheral or fragmented habitat patches. While they may not support as much wildlife movement as core corridors, they are still important for maintaining connectivity and facilitating genetic exchange between populations.
- **Stepping Stone Corridors:** Stepping stone corridors consist of a series of smaller habitat patches that are interspersed within a matrix of unsuitable habitat. These corridors allow wildlife to move across fragmented landscapes by "stepping" from one patch to another, similar to stepping-stones in a river.

Road Crossings and Underpasses: In landscapes bisected by roads and highways, road crossings and underpasses serve as specialized corridors designed to facilitate safe wildlife movement across roadways. These structures help reduce the risk of vehicle collisions and maintain connectivity between habitat patches.

Map 1: – Map showing boundary of Corridors between Nallamala Hills and Sheshachalam Hills



Map 2: – Map showing Blocks of Corridors between Nallamala Hills and Seshachalam Hills



1.1. Brief Description of Corridor Areas and Significance for Tiger Conservation:

The NSTR (Nallamala Hills)-SVNP (Seshachalam) Corridor Landscape (together referred to as NSCL) connects NSTR with SVNP while ensuring connectivity to Sri Lankamalleswara Wildlife Sanctuary and Sri Penusila Narasimha Swamy Wildlife Sanctuary in the southern Indian state of Andhra Pradesh. The hill ranges of Nallamala, Velikonda, Palakonda, Seshachalam, and Erramala are hill ranges spanning an area of approximately 9689.40 sq. km, including four (4) Wildlife areas (2021.24 sq. km) such as Sri Lankamalleswara WLS (464.42 sq. km), Sri Penusila Narasimha WLS (1030.85 sq. km), Sri Venkateswara National Park (353.62 sq. km), and Sri Venkateswara Wildlife Sanctuary (525.97 sq. km). It lies in the central portion of the Nallamala Hill range, with a corridor extending from Nallamala Hills to Erramala, Lankamalla, and Seshachalam Hills in the Eastern Ghats of Andhra Pradesh. The corridor has been identified as a refuge for mammals including the tiger (*Panthera tigris*), leopard (*Panthera pardus*), dhole (*Cuon alpinus*), sloth bear (*Melursus ursinus*), jungle cat (*Felis chaus*), sambar (*Rusa unicolor*), chital (*Axis axis*), four-horned antelope (*Tetracerus quadricornis*), and several other species. The NSTR-SVNP corridor landscape (NSCL) is one of the largest contiguous forest blocks in the Eastern Ghats and one of the largest in Peninsular India. This area represents varied, unique habitats with many endemic species of flora and fauna.

In the recent past, tigers have been reported from Sri Lankamalleswara Wildlife Sanctuary (herein referred to as Lankamalla), Palnadu District, Marripadu/Udayagiri of Atmakur (Nellore) Range of Nellore District, and Kalyani Dam site of SVNP in Tirupati. Tigers have also been reported breeding in the Rudravaram Range of Nandyal Division and Porumamilla Range of Kadapa Division, which have been proposed as part of the buffer areas. NSTR (along with GBM) is the main source population for immigrating tigers in the adjoining landscape, making the NSCL of critical importance in view of tiger conservation in India. Anthropogenic pressure is posing an increasing threat to the connectivity of this corridor. Immediate threats include the development of roads and railway lines, uncontrolled religious tourism, annual forest fires, and the degradation of forest-based resources like cattle grazing and commercial extraction of forest produce.

The proposed corridor runs from North to South in two parallel hill sections covering parts of Kurnool, Nandyal, Kadapa, Annamaya, Tirupati, Nellore, and Prakasam Districts. The Nallamala Hills form the backbone of the Eastern Ghats forming an unbroken chain of rugged hills with precipitous cliffs. The Kurnool-Guntur Highway and Nandikanuma (Nandyal-Giddalur Road) bisect the hills from East to West. In the center of these hills is Gundla Brameshwaram Wildlife Sanctuary (GBM), which forms the extended core of NSTR. The average height of Nallamala Hills is 800 m with the highest point Bhaireni Konda 1100 m.

The Seshachalam hill ranges run from Northwest to Southeast, over to a length of about 80 km and extends 32 to 40 km in the two Rayalaseema region districts, Tirupati and Kadapa. These ranges have typical gorges and gaps due to faulting and stream erosion resulting in discontinuous ranges. The altitude of Seshachalam hill ranges varies from 168 to 1187 m above MSL. The highest hill peak is Tellaralla Penta (1187 m) and most of the other hill peaks are above 900 m MSL.

There are three Sanctuaries in the corridor that include Sri Lankamalleswara Wildlife Sanctuary (Lankamalla), Sri Venkateshwara National Park (SVNP), Sri Venkateswara Wildlife Sanctuary and Sri Penusila Narsimha Swamy Wildlife Sanctuary (Penusila). The corridor connects Nallamala through a narrow corridor interspersed with three major roads with Lankamalla, which forms a block of 600 km^2. The forest of Lankamalla is disjunct with the Pennar River abutting its Southern edge and the valley along the river being under intensive agriculture due to its fertile soil, with a linear road cutting across it. After a narrow connectivity the corridor enters Palakonda hill ranges which are contiguous and sometimes referred to as Seshachalam hills. The center of these hills lies SVNP, which branches out into the Velikonda Hill ranges. Veligonda is connected except for Somasila Dam, which causes seasonal resistance to connectivity. These hills are prone to fragmentation and have associated with risks of significant land-use change.

1.1.1 Existing Habitat Corridors: Natural Habitat Corridors:

Large carnivores like tigers and leopards, which are known for their long dispersal abilities, need natural corridors. There are large blocks of forest 'Natural Habitat Corridors' that play a crucial role in sustaining healthy ecosystems, promoting species resilience, and fostering coexistence between wildlife and human communities. These corridors serve as vital conduits for wildlife movement, allowing species to migrate,

disperse, and access essential resources across fragmented landscapes. Protecting and enhancing these corridors is essential for maintaining biodiversity and ecosystem services in the face of environmental challenges, which are further aggravated by changing climate. Lack of natural corridors could also potentially lead to increased instances of human-wildlife conflict, genetic bottlenecks, and increased intraspecific competition within species.

One of the major natural 'core corridor' is the Ahobilam area, which is a natural extension of GBM and has been presently proposed as a buffer area. The Seshachalam Hill Ranges connecting Lankamalla with SVNP. Similarly, the hills of Veligonda Hill range from Seshachalam Hills and run parallel to Nallamala Hills for over 200 km. Another, vital natural corridor starts at Palakonda hills, connecting Lankamalla with Seshachalam Biosphere Reserve and eventually linking with SVNP.

1.1.2. Existing Habitat Corridors: Remnant Habitat Corridors:

Much of the forest in eastern part of corridor is heavily degraded. These ancient hill ranges of Eastern Ghats have suffered geological erosion, lacked soil depth and falls in rain shadow region. The natural forest in this region is scrub type, open grasslands, open savannah lands with sparse and stunted tree growth. Despite the fragmentation these hills have large patches of forest. These dry hills act a '*corridors*' that connect the Markapur forests (Proposed Buffer) with the Veligonda range connecting with Sri Penusila Narasimhaswamy Wildlife Sanctuary (SPNWLS).

1.1.3. Ensuring Habitat Connectivity:

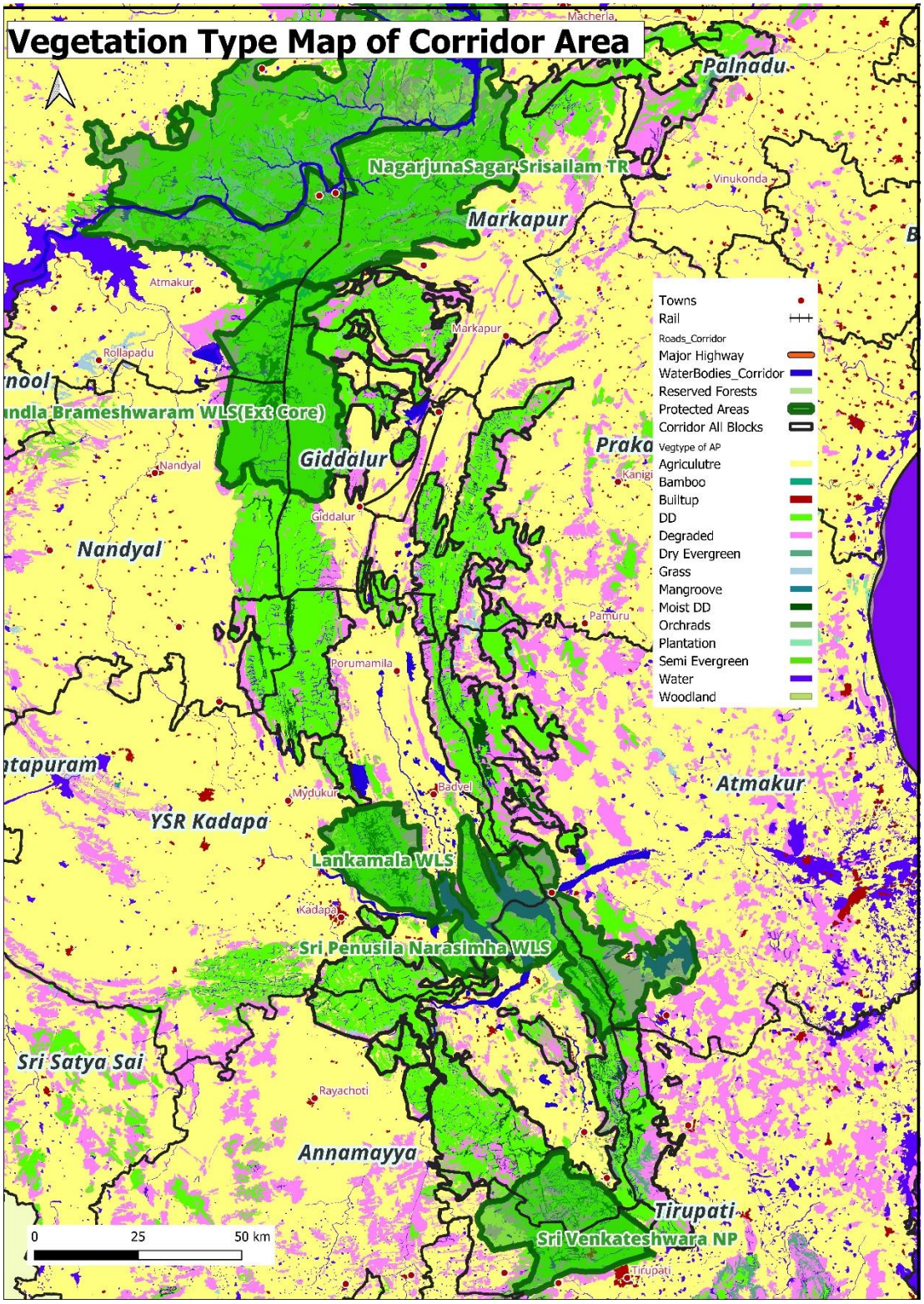
Landscape connectivity can be achieved for animal species either through landscape linkages by maintaining broad tracts of habitats. If these get fragmented, they can be connected in two main ways, by managing the whole landscape mosaic to promote movement and population continuity, or by managing specific habitats within the landscape to achieve this purpose. Clearly, the most desirable alternative is for the whole landscape to be managed in a way that maintains connectivity for species, communities and ecological processes. The dispersing animals may not live or reproduce in all parts of the mosaic but are able to move among most habitats to obtain access to resources such as food and shelter, to colonize new available niches or to move between local populations. If suitable patches of habitat are set within a matrix

of generally unsuitable or hostile environments, landscape connectivity depends on the availability and arrangement of suitable habitats. Either continuous habitat corridors referred to as 'Core Corridors' or discrete 'Stepping Stones' patches of favoured habitat may assist individuals to move through the inhospitable matrix. Additionally, there are some peripheral corridors that are used by tigers as secondary pathways, that connects peripheral or fragmented habitat patches. These corridors are typically smaller in size compared to core corridors. Maintaining connectivity and facilitating genetic exchange between these corridors may not support as much wildlife movement, however, they are still important for population viability. This approach depends on identifying and managing specific habitats for wildlife based on the utility of that patch in terms of habitat connectivity.

The NSCL provides large chunks of extant habitat ranging from 200-600 km^2 even outside the Protected Areas like the Palakonda hills in Kadapa or Veligonda hills of Nellore. These '***Landscape Linkages***' can host breeding tiger populations and also act as refugia for many large mammals and threatened species of flora and fauna. However, there is a need for identifying 'Core Corridors, 'Stepping stones' and 'Peripheral Corridors' which connect NSTR with nearest viable habitat through a 'Habitat Corrdor' eventually ensuring connectivity within NSCL.

1.1.3.1. Methods Used for Identification of Corridors: Two methods were used for identifying the tiger corridors including Least Cost Path analysis and further refinement with Circuit scape theory with least-cost analysis.

Map 3: Map showing Vegetation type of Corridors between Nallamala Hill and Seshachalam Hills



1.1.3.1.1. Least Cost Path Method:

The least-cost path method is a technique used in geographic information systems (GIS) and spatial analysis to determine the most efficient path between two points based on a cost surface. This cost surface can represent various factors such as terrain ruggedness, land use, or transportation infrastructure. The least-cost path algorithm finds the path with the lowest cumulative cost from a starting point to a destination point, considering these factors.

A corridor in the context of the least-cost path method refers to a zone or area within which the least-cost path is determined. It is often used in urban planning, environmental management, or infrastructure development to identify optimal routes for features such as roads, pipelines, or wildlife corridors.

The Least-Cost Path method is primarily used to identify the potential movement possibilities and was validated using both field data and historical tiger movement data. Based on the analysis, potential corridors were identified that connect tiger habitats. Corridors may vary in width and length depending on the landscape features and the needs of tiger populations.

1.1.3.2. Circuit Scape with least-cost analysis:

Corridor identification using Circuit Scape with Least-Cost Path (LCP) analysis is a powerful method for delineating optimal pathways for wildlife movement, including tiger corridors. Circuit Scape is a software tool used in landscape ecology to model connectivity in landscapes based on resistance to movement. It uses the prepared cost surface along with the start and end points. Circuit Scape simulates the flow of currents through the landscape, with current intensity indicating the level of connectivity between different areas. The resulting output is a connectivity map that shows the strength of the connection between the start and endpoints. Based on the Circuit Scape output the corridors are delineated and areas of high connectivity are identified, that form potential corridors between the start and endpoints. These areas represent the least-cost pathways for tiger movement through the landscape.

The identified corridors are used in this NSPC to guide conservation planning efforts, such as land acquisition, habitat restoration, and mitigating human-wildlife conflicts. These measures are to be implemented to protect and manage the corridors to ensure

their functionality for tigers and other wildlife. By combining Circuit Scape with least-cost analysis, you can effectively identify and prioritize corridors for tiger movement, contributing to their conservation and the overall health of the ecosystems they inhabit.

1.1.4 Area and extent under proposed corridor:

There are 6 blocks identified together as NSCL in the Corridor Plan of Tiger Conservation Plan of NSTR. Apart from these blocks, bottlenecks to connectivity have also been identified in the buffer areas in the eastern side of GBM in Markapur and Giddalur Divisions. In this region the Reserved Forest habitat gets disconnected and animals have to move through non-forest lands. These areas consist of outside Core areas of Markapur and Giddalur Divisions of NSTR, Project Tiger Circle.

The NSTR-SVNP Corridor Landscape comprises of areas outside the core and buffer areas and is divided into 6 Blocks and 3 sections that include the following:

There are 5 ‘Core corridors’ having 4 Stepping stone corridors that interconnects and make the NSCL a solid chunk of Tiger habitat. In this exercise, we identified 4 key blocks of corridor called as ‘Core Corridors’. There are 4 Stepping-stone corridors that have been identified.

Block 1: The massive forest area lying south of GBM that includes the proposed Ahobilam Wildlife Sanctuary in the Rudravaram, Onipenta and Prodattur ranges forms Block-1 of the identified as ‘*Core Corridor’* of NSCL landscape. This area is contiguous with GBM and has width of ranging from 4 km in South to 24 kms in the starting of the block. This block has over 5 temples which are rapidly growing including Ahobilam Temple and Kasineini Kshetram in Jyothi. This block is an essential ‘Landscape linkage’ and solid block in itself that connects Nallamala Hills with Seshachalam hills.

Block 2: The narrow section of forest of Onipenta and Badvel Ranges of Kadapa Division that connects the buffer area of NSTR with Lankamalla Wildlife Sanctuary (Lankamalla). This is very important corridor and narrow patch of forest of 18 km lengths that is 3 kms to 6 kms wide and is adjoining to Lankamalla. This patch of forest is interspersed with 3 roads of which at least 2 are identified for expansion/doubling.

Block 3: This block runs across 120 kms parallel to Nallamala hills and Lankamalla hills from North to South. This connects the buffer area of NSTR with Peninsula and consists of large blocks of dry scrub forests and identified as another ‘*Core Corridor’* of NSCL landscape. There are two major highways passing through this block. This

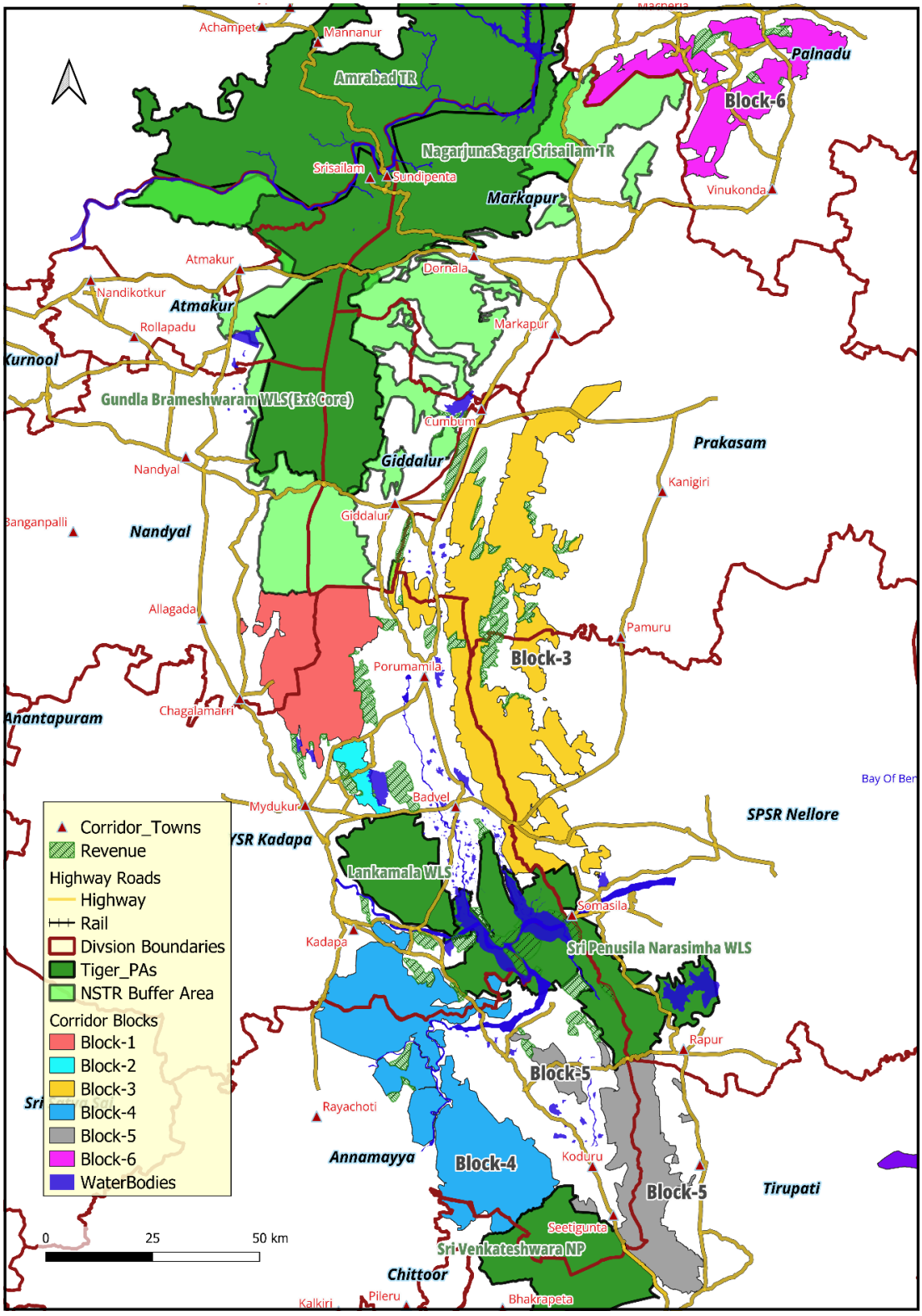
block consists of Badvel and Porumamilla ranges of Kadapa District, Kangiri and Bestavaripeta of Prakasam District and Udayagiri, Rapur and Atmakur Ranges of Nellore District.

Block 4: The southwest part of Lankamalla, across river Pennar the Palakonda hills start which runs down till SVNP which can be the third '*Core Corridor'* of NSCL landscape. There are several linear intrusions, a railway line and deep valleys mark the corridor. This is the connection patch connects Lankamalla and SVNP through Kadapa, Rayachoti, Rajampeta, Sanipaya and Bhakrapeta Ranges of Kadapa, Annamayya, Kodur and Tirupati Districts.

Block 5: The forest that stems from SVNP and runs North-eastern direction upto Peninsula Narsimha Wildlife Sanctuary (Peninsula) is identified in this block and is also another '*Core Corridor'* of NSCL landscape. The dry hills have one major road connecting Rajampeta and Rapur. This block includes Kodur, Tirupati, Srikalahasti and Venkatagiri ranges.

Block 6: In the Palnadu District adjacent to NSTR, tigers have been regularly recorded to be using these areas. The identified corridor area is contiguous with Yerragonda Palem Range and Vijaypuri South Range of Markapur Division that connects with Macherla and Vinukonda Range of Palnadu Division is identified as *'Peripheral Corridor'*. The tigers are moving across these landscapes and the area loops back to NSTR and that has further continuity with Amrabad Tiger Reserve in Telangana. Since part of corridor areas may not help in dispersal of tigers but still, they are identified as peripheral corridor keeping in mind the immense importance for tiger presence and movement in this block.

Map 4: Map showing Blocks of Wildlife Corridor in Nallamala-Sheshchalam Corridor:



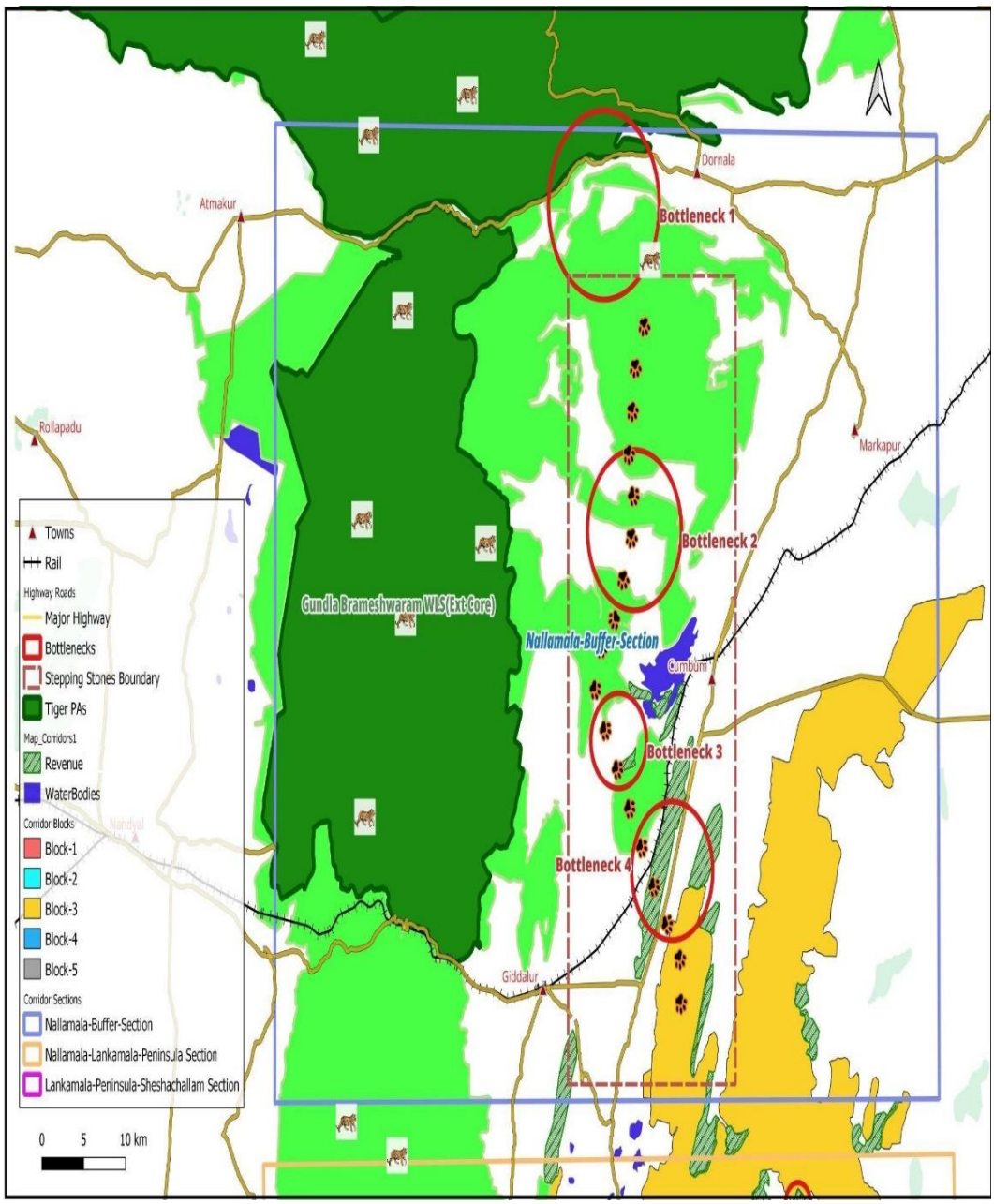
1.1.5. Disturbances in Habitat Corridors:

There is a substantial presence of wildlife in this proposed area of the corridor. To emphasize, the presence of the Tiger as the flagship species in GBM Sanctuary enhances the importance and need for the protection of all the connecting habitats. Apart from this, the endangered Jerdon's Courser habitat which is declared as Sri Lankamalleswara Wildlife Sanctuary also exists in this tract of corridor. This segment of corridor supports and connects the two Wildlife Habitat areas with rich biodiversity. The entire tract of forests is contiguous but for six weak links of fragmentation seen at the juncture of Sidhout Range & Vontimitta Range of Kadapa Division. This specific portion of the corridor is considerably fragmented due to the presence of human habitation and the Penna River. Apart from these barriers i.e., Roads "Mydukur – Badvel" "Kadapa-Tirupathi" "Nandyal – Giddalur", Railway lines "Nandyal – Guntur", "Kadapa – Tirupathi", human habitations adjacent to the Reserve forests within a radius of 2 to 3 Kms are also present. The complex structure of the corridor makes it imperative to divide the corridor into Sections to understand the connectivity in a better manner. There are 3 sections identified for the purpose which are discussed as follows.

1.1.5.1 NSTR Buffer Corridor Section:

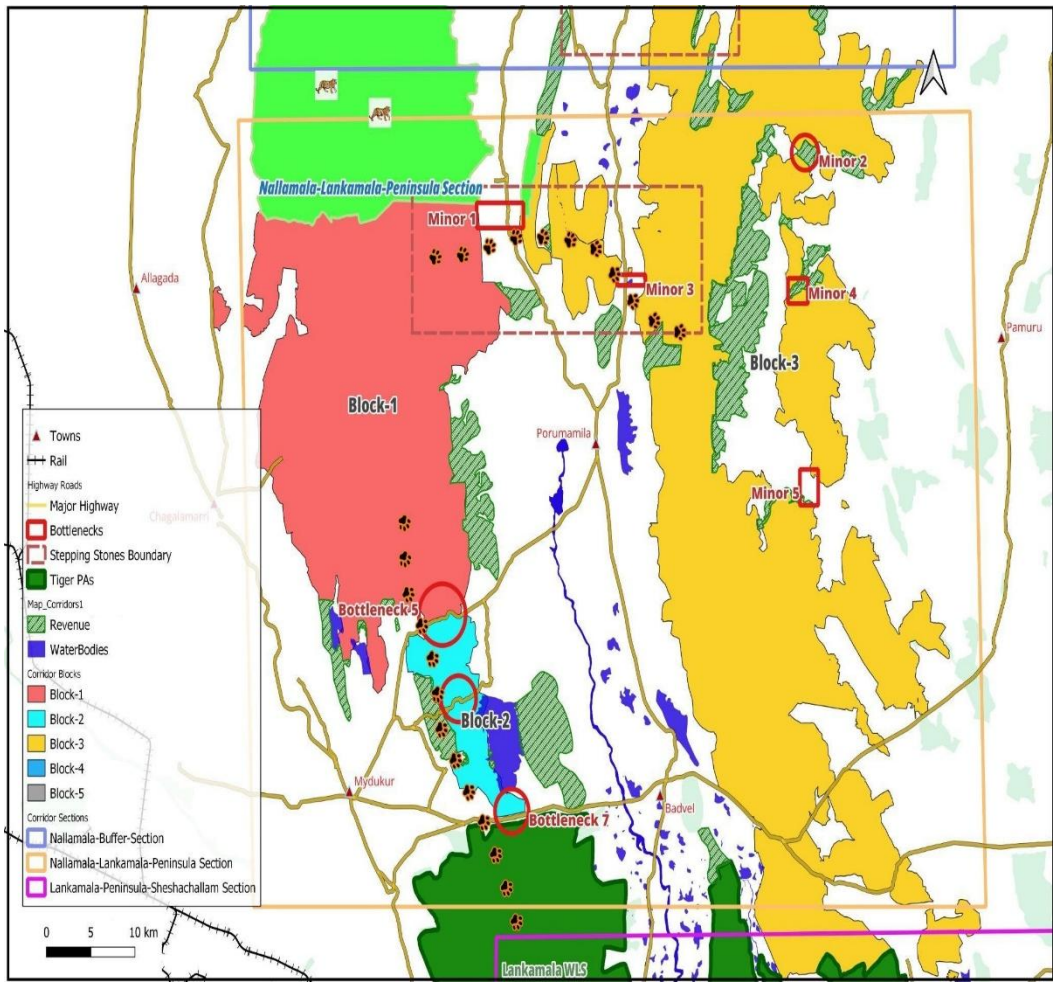
The buffer area of Markapur Division that connects forest of Palnadu Division is fragmented. Over 2/3rd of the area in this block is covered by dry deciduous or scrub forest with undulating hills averaging about 600 MSL. The core area block of Dornala range of NSTR is connected through Markapur range areas (outside core area of NSTR) where tigers have become residents. Currently, another area in this Section that holds tigers is in Turimella range of Giddalur division that falls outside of GBM. The overhanging blocks of forest from the main Nallamala landscape runs parallel from west to east. This area comprises of a total of 4 *'Bottlenecks'* with one stepping stone corridor identified to ensure functional connectivity of the landscape.

This area also has about 5000 hectares of 'state owned forest' which can aid the connectivity. The Guntakal-Vijaywada railway line and Giddalur- Cumbum road are major highways. The construction of Veligonda tunnel No.2 would lead to bringing water to Markapur area which can isolate the corridor completely. However, the water may be available only for the flood season.


Dornala
Atmakur
Bottleneck 1
Rollapadu
Markapur
Bottleneck 2
Gundla Brameshwaram WLS (Ext Core)
Nallamala-Buffer-Section
Cumbum
Bottleneck 3
Bottleneck 4
Giddalur
Towns
Rail
Highway Roads
Major Highway
Bottlenecks
Stepping Stones Boundary
Tiger PAs
Map_Corridors1
Revenue
WaterBodies
Corridor Blocks
Block-1
Block-2
Block-3
Block-4
Block-5
Corridor Sections
Nallamala-Buffer-Section
Nallamala-Lankamala-Peninsula Section
Lankamala-Peninsula-Sheshachallam Section
0 5 10 km

1.1.5.2 Nallamala to Lankamalla Corridor Section:

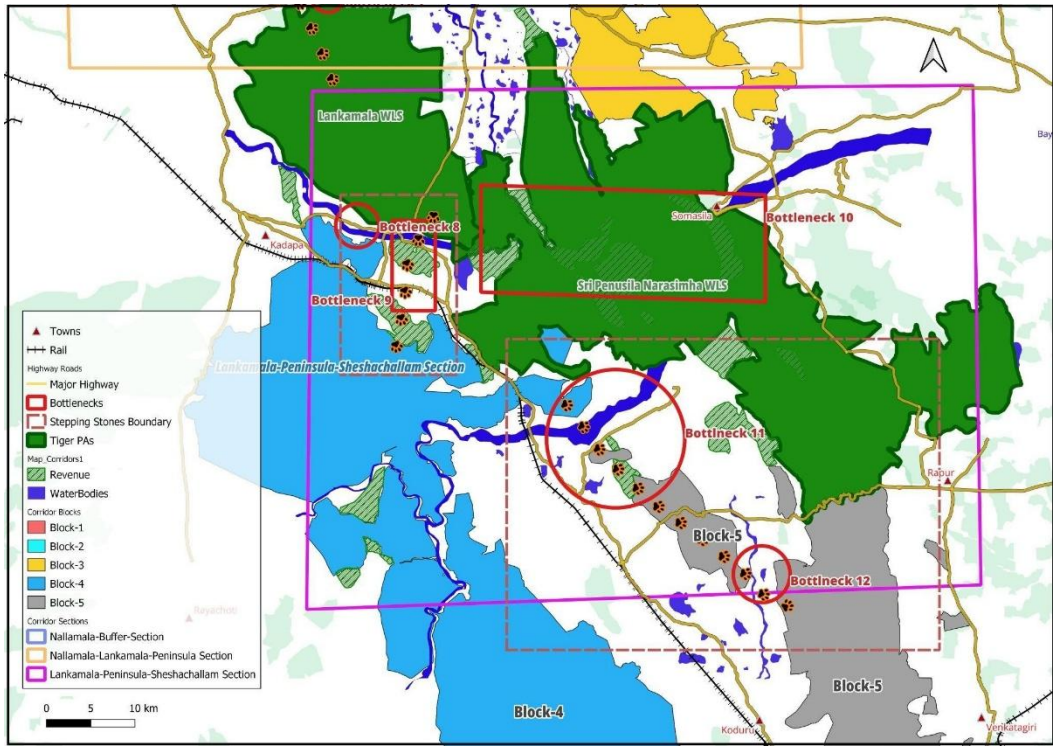
The buffer of NSTR extends till the eco-sensitive zone of NSTR which is about 15 kms from boundary of GBM. The corridor is contiguous identified as '*Core Corridor*' and identified as Block-1 forming continuous forest South of the buffer area until it reaches Mydukur-Porumamilla road in the South. The Kancherlamoram hills is a minor undulating hill range running South to North connecting Lankamalla in the South and Lankamalla in the North in Badvel and Proddatur forest ranges forming a chicken neck kind of corridor. This area comprises of 3 key *'Bottlenecks'* that has issue of roads passing through each of them managing these linear intrusions is essential to ensure functional connectivity of the landscape. The Mydukur-Badvel road passing through has 2 kms of forest cover separates Lankamalla with the corridor Block-2 and very important bottleneck 7 lies in that corridor.



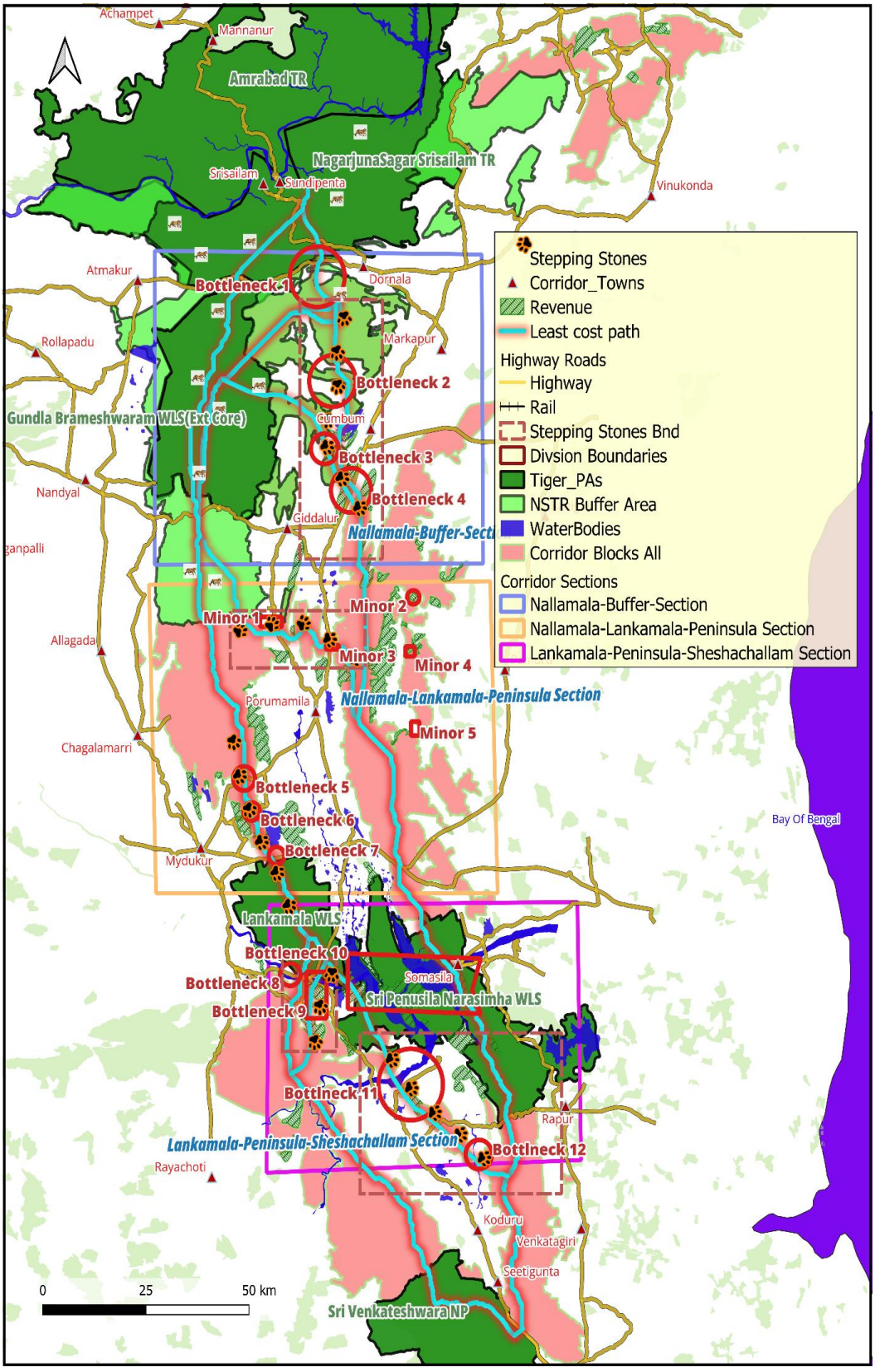
1.1.5.3 Lankamalla to Seshachalam Corridor section:

The corridor tract includes parts of 5 territorial divisions. The corridor is mostly covered by Seshachalam hill ranges. There have been reports of the presence of tigers in the region earlier, and the habitat is suitable for them. From Talakona to Veligonda, it is a continuous patch without significant fragmentation or human habitation. Sri Venkateswara National Park and Sanctuary are part of this region. Moreover, the area covering Seshachalam hills was declared as Seshachalam Biosphere Reserve (BR) by MoEF during 2011.

This corridor stretch has barriers such as the railway track from Renigunta to Guntakal, along with the continuous road from Renigunta to Kadapa in the Tirupati and Balapalli Ranges of the Tirupati Division, the Sanipaya to Rajampeta road in the Annamayya Division, and the Rangampeta to Kothapeta road in the Chittoor Division. There are no major human habitations except for the Tirumala enclosure within this tract. There are two 'Stepping Stones' and six bottlenecks identified in this section of the corridor.



Map 5: Map showing Corridors between Nallamala Hills and Seshachalam Hills divided into sections



1.2. Corridor Configuration of the Ground beyond Core and Buffer Areas:

The Eastern Ghats, which trend northeast to southwest, are situated on the eastern edge of the Deccan Plateau, between the basins of the Krishna River (north) and the Penneru River (south). They are composed of quartzites and slates of the Cambrian Period (about 540 to 490 million years ago), with interbedded lavas of a younger age. Tributaries of the Kunderu River — itself a tributary of the Penneru — have divided the range into longitudinal hills and valleys.

The terrain is undulating and interrupted by hillocks of igneous rocks. The principal hill ranges that form this massive tract of forest include Nallamala, Kancherlamoram, Lankamalla, Palakonda, Seshachalam, Vinukonda, Turupukonda, Guttikonda, etc. The Nallamala Hills form the northern boundary of Kadapa and Nandyal Divisions. These hills run in a northeasterly direction, forming an undulating plateau with lush vegetation. The Lankamalla Hills, starting from the north of the Penna River, extend in irregular spurs in a northerly direction until they rise abruptly into a solid and imposing mass of hills and then dip nearly to the level of the plains, where the Mydukur–Badvel Road passes over a low spur of hills near their base. These hills contain dry deciduous forests of an interior type in the plains, while on the elevations they support a better type of forest dominated by Red Sanders.

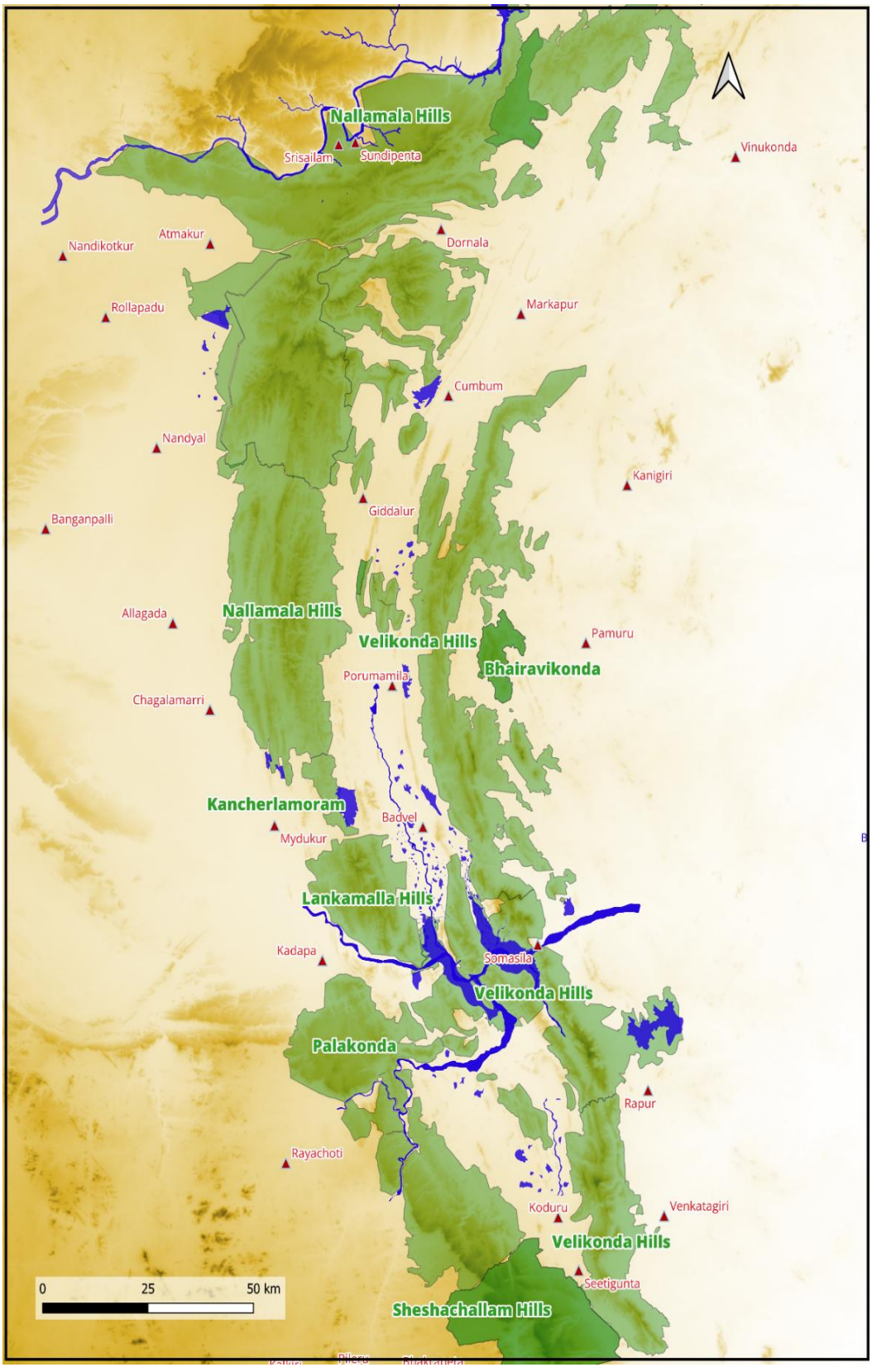
The Seshachalam Hill Range runs generally in a northwesterly direction up to the gap formed by the Cheyyeru River near Buduguntapalli village. The highest points on the Seshachalam Hills reach about 1,152 meters above mean sea level (MSL). From Buduguntapalli village, these hills turn westward and continue in a westerly direction under the name of the Palakonda Hills, forming almost the southern limits of this corridor.

The Kancherlamoram Hills form a minor undulating hill range, running south to north and connecting the Lankamalla Hills in the south with the Nallamala Hills in the north. The hill range contains scrub-type forests, with better growth at higher elevations.

The extensions of the Palakonda Hills, running from the southwest to northeast, bifurcate the erstwhile districts of Kadapa and Ananthapur. The group of hills found in the region between the Mandavya and Cheyyeru Rivers, locally called the Yerrakondas, are actually a part of the Seshachalam Hill Range. These hill ranges consist of massive, unbroken, rugged, and fairly steep hills extending over a length of about 120 km and an average width of about 15 km. Apart from the above principal

hill ranges, there exist isolated hillocks scattered across the region, with large boulders and rocky slopes. Sheet rocks are also not uncommon in these hills.

Map 6: Map showing topographic features of Corridors between Nallamala Hills and Seshachalam Hills



CHAPTER-2

STATUS ASSESSMENT OF TIGERS/PREY IN CORRIDOR

2.1 Distribution and Abundance Status with Type of Use by the Tiger and Co-Predators.

NSTR, along with its extended core (GBM), has become a source site for the entire state of Andhra Pradesh and also Telangana (Amrabad Tiger Reserve). In the past, tigers have been reported since 2015 in the state-wide occupancy surveys in the Porumamilla and Badvel Ranges of Kadapa Division (including Lankamalla) and the Rudravaram Range in Nandyal Division. Since 2019, tigers have been intensively monitored in the corridor areas. In 2019, seven tigers were captured on camera during Phase IV of tiger monitoring, and in 2023, nine tigers were captured on camera traps. These represent the minimum numbers, with the actual population likely to be slightly higher.

A tiger was recorded on a camera trap in the Kalyani Dam area of SVNP in Tirupati Circle in 2021, after a gap of over 20 years. A tiger was also reported to have crossed the Velikonda Ranges and reached the Atmakur Range of Nellore Division in 2023. This dispersal movement of tigers in search of new territories and natural habitats highlights the critical need for maintaining and strengthening corridors. Although there is no conclusive information on how the tiger moved to SVNP, it is suspected that the Lankamalla–Palakonda–Seshachalam Corridor was used for dispersal.

There has been intensive camera trapping in the recent past, but a more systematic and coordinated approach may reveal the actual status of tigers outside the Nallamala landscape. In the occupancy survey, it was revealed that leopards and dholes were widespread, occupying 60%–70% of the corridor area. However, the intensity of habitat use varied significantly. In the absence of intensive and seamless management of the entire landscapes outside the Nallamala Hills and Kadapa forests, there could be under-reporting of tigers and other co-predators.

Table: 2. Tigers in Corridor:

Year	Male	Female	Cub	Total
2019	3	4		7
2020	2	2	-	4
2021	2	4	2	8
2022	2	5	2	9
2023	3	6	-	9

Statement showing the Tiger Distribution details in the Corridor area of Kadapa Division from 2019-20 to 2023-24

ID	Circle	Division	Range	beat	Location
COR-1	Kurnool	Proddatur / Kadapa	Porumamilla	Jyothi	Anantharayudu Temple
COR-2	Kurnool	Proddatur / Kadapa	Porumamilla	Jyothi	Pulibonu Vanka
COR-3	Kurnool	Proddatur / Kadapa	Porumamilla	Jyothi	Vippamanu Junction
COR-4	Kurnool	Proddatur / Kadapa	Porumamilla	Jyothi	Kurrapubavi Rastha
COR-5	Kurnool	Proddatur / Kadapa	Porumamilla	Jyothi	Mekapotu sela
COR-6	Kurnool	Proddatur / Kadapa	Porumamilla	Jyothi	Teak Plantation (Old)
COR-7	Kurnool	Proddatur / Kadapa	Porumamilla	Itukulapadu	Pavraipeta
COR-8	Kurnool	Proddatur / Kadapa	Porumamilla	Itukulapadu	Near Bugga Base camp
COR-9	Kurnool	Proddatur / Kadapa	Porumamilla	Peddabavi	Mallukunta
COR-10	Kurnool	Proddatur / Kadapa	Porumamilla	Peddabavi	Peddabavi
COR-11	Kurnool	Proddatur / Kadapa	Porumamilla	Thaduku	Gundubavi
COR-12	Kurnool	Proddatur / Kadapa	Porumamilla	Thaduku	Pichireddy bavi
COR-13	Kurnool	Proddatur / Kadapa	Porumamilla	Balayapalli	Ulindramanu Revu
COR-14	Kurnool	Proddatur / Kadapa	Porumamilla	Balayapalli	Pulibonu to Ulindramnu rastha
COR-15	Kurnool	Proddatur / Kadapa	Porumamilla	Mallepalli	Sogalabodu
COR-16	Kurnool	Proddatur /	Porumamilla	Mallepalli	Nichendla

		Kadapa			
COR-17	Kurnool	Proddatur / Kadapa	Onipenta	M.R.Palli	Yelugubanti Sela
COR-18	Kurnool	Proddatur / Kadapa	Onipenta	Kothapalli	Kothabavi

2.2. PREY-PREDATOR RELATIONSHIPS:

The prey animals found in the corridor area include sambar, chital, nilgai, wild pig, and four-horned antelope, which are quite widespread. Barking deer is also reported from the Seshachalam Hills, while mouse deer are restricted to moist and riverine forest patches in the Nallamala region. Sambar deer are the most common ungulates, reported from almost the entire corridor region, except in barren hill areas which have very sparse vegetation.

The corridor area supports low to high densities of prey populations, depending on habitat availability. The leopard is quite widespread, but the population densities are not well documented and are expected to be influenced primarily by prey abundance. The wild dog (dhole) distribution was recorded in occupancy surveys across many areas, but the species prefers denser forests with higher prey availability.

2.3. ASSESSMENT OF THREATS.

The population density of 216 persons/km^2 in the corridor region and there are several threats associated with human population, rapid urbanization, developmental projects, and dependence on forests. There are several threats that can be detrimental to the objectives of the conservation of corridors. Champion and Seth, in their book Forest Types of India, have documented how a dry deciduous forests like the ones found in Corridor landscape can be converted into an arid scrub region due to sustained anthropogenic pressures and overgrazing. The degradation of habitat is accelerated by climate change, disruption of rainfall patterns, and long summers. The specific threats to the corridor area include poaching/hunting of wildlife, fragmentation of forested landscape, infrastructure development, mining and dam projects, forest fires, over-grazing of forests, and unsustainable religious tourism.

Poaching/hunting of wildlife: Poaching is a very nefarious and cryptic activity that can go undetected even in the best-protected reserves. This happens for subsistence hunting, bush meat hunting, sport hunting, local trade in the region, international illicit

trade, retaliatory killing, and the use of lethal methods of crop protection. The detection rate is very low due to a lack of knowledge of poaching activity also once-detected conviction rate is abysmally low. This threat scope is quite wide, with the potential to wipe out the local population and make forest blocks empty of tigers or their prey. Recovery of such depleted populations can take several years or even decades, making this an issue of highest conservation priority.

Fragmentation of forested landscape: Habitat loss and fragmentation have been recognized throughout the world as a key issue facing the conservation of biological diversity. Most corridor areas are becoming increasingly surrounded by intensively modified environments and in the long term appear destined to function as isolated natural ecosystems. The process of forest fragmentation has three components, an overall loss of forest, a progressive fragmentation of surviving forest stands into smaller blocks, and an increasing spatial isolation of fragments through time.

Infrastructure development: Linear infrastructure like roads, railways, and electric lines disrupt the continuity of corridors leading to fragmentation. The direct threats include wildlife strikes, entanglement/trap mortality, habitat fragmentation, altering behaviors, barriers to movement, altering use of habitat, increased human presence, increased hunting, conduits for invasive alien species, effects on population genetics, air pollution, altering natural processes, and changed discharges in water bodies

Mining and dam projects: The irrigation sector has developed rapidly in the past 30 years in Andhra Pradesh. The Somasila dam submerged massive habitat in SPNSWLS by the dam having a surface area of 212.28 km^2 (52,456 acres) with a live storage capacity of 1.994 km^3 or 75 tmcft. The reservoir can get water by gravity from the Srisailam reservoir located in the Krishna basin. It is the biggest storage reservoir in the *Pennar River* basin and can store all the inflows from its catchment area in a normal year. This reservoir can also feed by gravity nearly 72 tmcft gross storage capacity to the Kandaleru reservoir. Under Indian Rivers Inter-linking projects, it is planned to connect the reservoir with the Nagarjunasagar reservoir to augment its water inflows. The upcoming Veligonda project poses a new threat submerging massive areas along the Buffer Corridors.

The expansion of the cement industry, mining for limestone, quartz, barytes, etc is steadily growing. However, these expansions of industries are unmindful of ecological

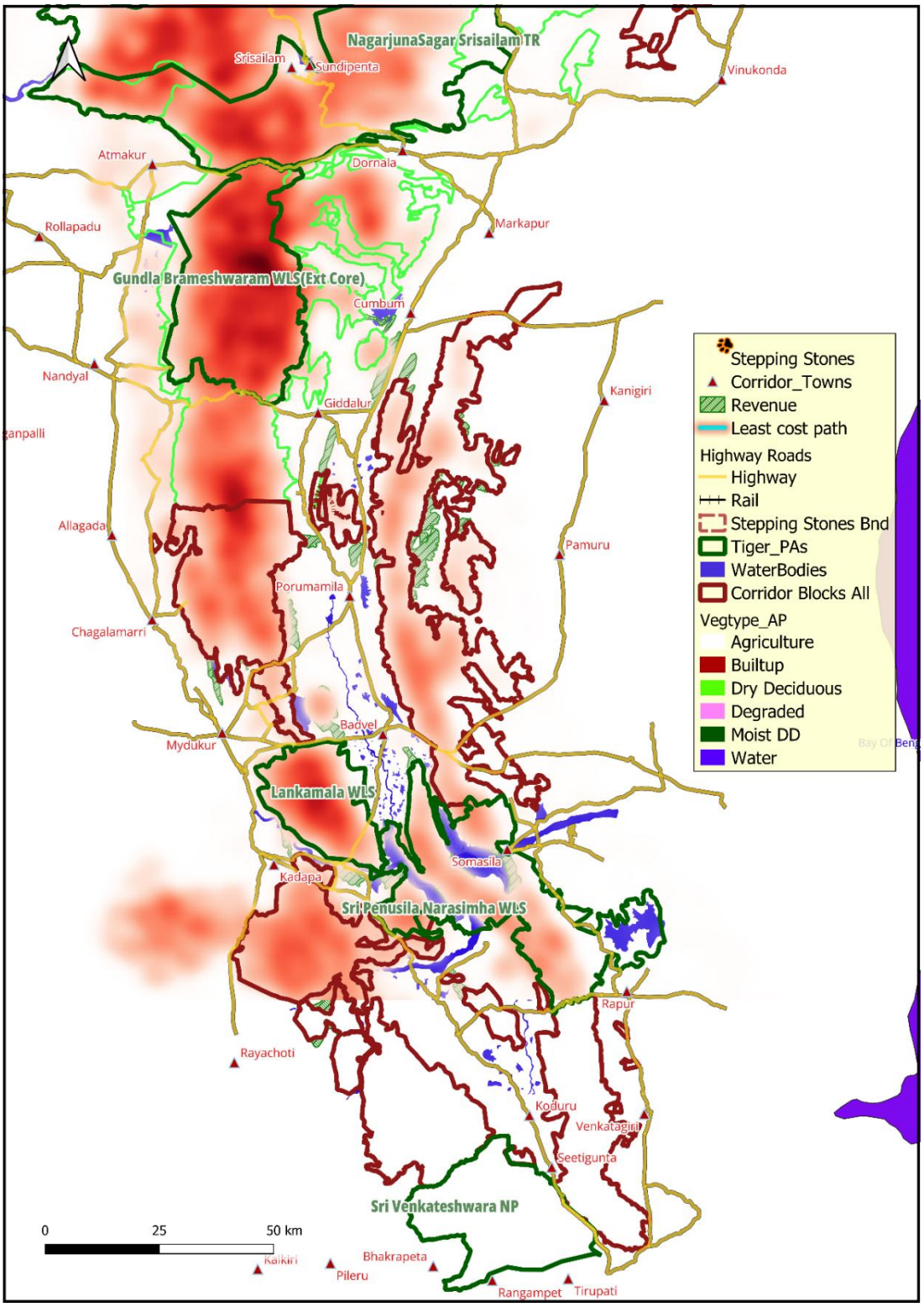
impacts on the fragile ecosystems of NSCL. The forest connectivity is one issue, but the overall degradation of the environment should be kept in mind while taking up developmental projects in these areas.

Forest fires: Human activities, including agricultural practices, uncontrolled burning of crop residues, NTFP collection, arson, and burning for fresh sprouting of grasses are the main causes of forest fires. In many cases, accidental fires caused by human negligence or deliberate arson contribute significantly to the incidence of forest fires in the NSCL. The accumulation of dry vegetation, such as fallen leaves, branches, and grasses, acts as fuel for forest fires. In the Eastern Ghats, the presence of dense forests and shrublands provides ample fuel for fires to spread rapidly, especially during periods of drought and high temperatures.

The rugged terrain and diverse topography of the Eastern Ghats influence the behavior and spread of forest fires. Steep slopes, narrow valleys, and inaccessible terrain can hinder fire-fighting efforts and exacerbate the intensity of fires, leading to greater ecological damage.

Forest fires in the Eastern Ghats have profound ecological impacts, including the loss of biodiversity, habitat destruction, soil erosion, and degradation of ecosystem services. Fires can destroy valuable habitats for wildlife, disrupt ecological processes, and alter vegetation composition, leading to long-term consequences for ecosystem resilience and functioning. Forest fires pose significant challenges to conservation efforts in the Eastern Ghats, undermining efforts to protect and restore biodiversity, conserve endangered species, and maintain ecosystem health.

Map: 7 – Forest fire maps of NSTR –Sheshachalam corridor landscape



The loss of forest cover and degradation of habitats due to fires can jeopardize conservation goals and hinder the achievement of sustainable development objectives in the region.

Over-grazing of forests: The dependence on grazing, especially in the summer season and immediately post-monsoon has been a major problem in degrading the forest of Eastern Ghats. It has been demonstrated in many studies that most of the local cattle, especially those in the fringes of the forests resort to day-grazing. Routinely, herds of livestock are being brought into the forests during morning hours for grazing and return to villages in the evening. By this, the forest areas near the villages are over-grazed and the interior portions are allowed to remain unvisited, except by the foreign cattle of Nellore District. During periods of severe drought, even the local cattle are driven into the interior forests for grazing. The grass is generally removed in head loads. The requirements of local and exotic cattle are adequately met by the forests of the district. The cattle density is estimated to be about 150-200 per km^2 in the forests that fluctuates between seasons. Apart from local grazers who collect entire village livestock and graze in forests there are also migratory herders which have been traditionally using the area.

Overgrazing of forests in the Eastern Ghats can have significant negative impacts on ecosystem health, biodiversity, and the livelihoods of local communities.

Here are some key points about overgrazing and its consequences:

1. Degradation of Vegetation: Overgrazing by domestic livestock such as cattle, goats, and sheep can lead to the depletion of vegetation cover in forested areas. Continuous grazing pressure prevents plants from regenerating and can result in soil erosion, loss of ground cover, and degradation of habitat for native flora and fauna.

2. Loss of Biodiversity: Overgrazing can reduce plant diversity and alter plant community composition in forest ecosystems. Grazing-sensitive plant species may decline or disappear, leading to changes in ecosystem structure and function. This, in turn, can affect wildlife populations dependent on diverse habitats for food and shelter.

3. Soil Degradation: Intensive grazing can contribute to soil compaction, erosion, and nutrient depletion. Trampling by livestock can disturb soil structure, reduce soil fertility, and increase susceptibility to erosion, particularly on steep slopes and fragile ecosystems.

4. Water Resources: Overgrazing can impair water quality and quantity in forested watersheds. Reduced vegetation cover can lead to increased runoff and sedimentation in streams and rivers, affecting aquatic ecosystems and downstream water users. Soil compaction from livestock trampling can also reduce water infiltration and recharge of groundwater aquifers.

5. Loss of Livelihoods: While grazing provides a source of livelihood for many communities, overgrazing can ultimately undermine sustainable pastoralism by degrading grazing lands and reducing forage availability. This can lead to conflicts over grazing rights, loss of income, and reliance on alternative livelihood strategies.

6. Ecosystem Resilience: Overgrazing weakens the resilience of forest ecosystems, making them more vulnerable to disturbances such as droughts, wildfires, and invasive species. Degraded forests may struggle to recover and may undergo state transitions to less productive or stable ecosystems.

Religious tourism places:

Habitat loss is because of encroachments, over-dependence on the fringe and enclosed villages, developmental activities (roads, dams, and expansion of towns), and pollution due to industries. In the recent past, poaching has been contained, but this nefarious nocturnal activity can easily go undetected.

The other major problem is related to Human resources, shortage of staff, overburdening territorial duties and, lack of training. There are no trained animal trackers or anti-poaching camps in the corridor areas.

1. **Settlement and Villages: -** The presence of the villages and settlements near the Tiger corridor contributes to habitat fragmentation as the traditional migratory routes and paths of the animals have been brought under cultivation.

2. **Habitat Degradation: -** Extensive transformation of natural forests into eucalyptus plantations and the conversion of forest lands to forest dwellers (under RoFR) in almost all reserved blocks across all corridor divisions has severely degraded the indigenous habitats of the area. These regions are often infested with invasive weeds such as Lantana and Eupatorium, which have further resulted in the loss of natural grassland areas.

3. **Crop depredation: -** Crop depredation is quite common, especially due to wild pigs. The extent of crop damage caused by wild pigs is significantly high across all beats, ranges, and divisions.

4. **Faulty Land use pattern: -** Frequent changes in cropping patterns and land-use conversion — from three-crop systems to horticultural crops and eventually to agricultural monocultures — have not only led to habitat degradation but also contributed significantly to soil erosion.

5. **Fire: -** Most forest fires in the area are man-made and can be attributed to various causative factors such as collection of NTFP, grazing, poaching, and sabotage by local tribals seeking employment during the fire season. The fire problem is particularly serious in all hilly areas. The dry deciduous forests in all divisions of the corridor area are especially vulnerable to severe fires due to the presence of dry teak leaf litter and other accumulated combustible material.

6. **Grazing: -** The cattle, goat, and sheep populations are very high in the corridor area. Not only do the local livestock populations depend on these forests for grazing, but there are also migratory herders whose animals regularly utilize even the core areas for fodder.

CHAPTER 3

LAND USE PATTERNS CONSERVATION MANAGEMENT ISSUES

3.1 Socio-Economic Profile of Villages and Resource Dependence and Human Wildlife Mutual Impacts.

3.1.1. Ethnology in Eastern Ghats of Andhra Pradesh

The tribal people of the Eastern Ghats of Andhra Pradesh have a long history, tracing their origins back to the prehistoric era. Evidence of Stone Age culture among these tribes is indicated by micro-lithic and mega-lithic sites discovered in the Upper Godavari region (Sanapati and Sahu, 1966). The state is drained by several major rivers, particularly in the Eastern Ghats, and many tribal communities settled along river streams passing through the hilly terrain. These tribes possess distinct cultural identities, including their own languages, heritage, customs, religious practices, and food habits. Most live deep inside forests with limited contact with urban or "civilized" populations. Their livelihood primarily depends on minor forest produce, hunting, and, to a lesser extent, shifting agriculture. Out of 33 recognized tribes in Andhra Pradesh, 27 communities are concentrated in these isolated hills and adjacent plains. According to the Tribal Welfare Department, Government of Andhra Pradesh (2011), the forests of the Eastern Ghats within the NSCL are inhabited by nine major tribal communities, the most significant of which are described below:

Yanadis

The Yanadis are more primitive aboriginals and concentrated mainly in the Chittoor, Kadapa, Nellore, Ongole, and Guntur districts of Andhra Pradesh. Yanadis are melanid Black Indians, a hunter-gatherer tribe (Rangha Rao, 1901) the tribes are said to be direct descendants of Paleolithic people. Chenchus and Yanadis both are from one parental stock and are believed to have originated in Nallamalai hill tracts (Raghavaiah, 1962). Yanadis speak only Telugu language with a characteristic dialect and accent. They don't have any special functions, ceremonies, or celebrations particular to them. They are integrated with the Hindu social system and practice. Yanadi lead a carefree life with contentment and unbridled merriment. Their diet chiefly consists of vegetable food and animals, wild fowls, and other birds of food value. They even dig rat holes

and use them in the menu. However, the best satiating food for them is fish. Honey gathering in forests and plains is also a common practice among them. Two sub-tribes are recognized within Yanadis, based on their occupation, Manchi yanadi, the superior type, and the Challa yanadis — are the inferior type and carry different names including Garapa yanadis, Chettu yanadis, Kappa yanadis, based on their habitation and the food taken. The Yanadis are short-statured with dark skin color, platyrrhine nose, long head, prominent chin, thick lips, and scanty hair both on head and body. They reside in huts usually constructed adjacent to a water source. Yanadis living in and around forests keep themselves busy collecting and selling minor products.

Chenchus

The Chenchus are another major tribal group inhabiting the Nallamala forests. They are Telugu-speaking, food-gathering tribes living deep inside the interior forest tracts. Chenchus prefer faith healing first, traditional herbal medicine next, and adopt modern medicine only when other methods fail. Their diet is simple, usually comprising gruel made of jowar or maize, supplemented with boiled tubers. They also collect firewood for domestic use and sale. Unlike other tribal groups, the Chenchus have retained most of their traditional lifestyle, resisting modernization and living in close association with nature.

Irulas/Yerkulas

Irulas/Yerkulas are dark-skinned, with thin narrow chests, thin bodies, and flabby muscles, reminding their general aspects of Nellore. Irulas are herbalists and are believed to have the power to cure certain poisonous bites of snakes, rats, and insects. They have no fixed place abode which they often change (Thurston, 1975).

Nakkalas

Nakkala is a nomadic tribe mostly found in the adjoining districts of Andhra Pradesh and Tamil Nadu. Nakkalas always move in bands/groups and they camp under the shade of trees at the popular centers. They are easily spotted by their peculiar dress, ornamentation, habitat, and occupation. They have several superstitious beliefs related to different types of diseases. The substantial population increase between 1971 and 2001 was because of the recognition of the Sugali, Yerukula, Yanadi, Nakkala, and other denotified, nomadic tribes as scheduled tribes in the entire state.

The tribal communities in the state of Andhra Pradesh mostly exhibited Proto-Austroloid features. Chenchus and Yanadis exhibit some Negrito strain whereas the

Khond and Savara have Mongoloid features. The tribal communities in Andhra Pradesh mainly belong to three linguistic families such as: Dravidian language family (Gondi, Koya, Kolami, Yerukula, and so on); Mundari language family (Savra, Gadaba, and so on); Indo-Aryan language family (Banjara, and others).

3.1.2. Dependency:

Villages falling in corridor areas are mostly dependent on forest for fuel wood, brushwood, and small timber for domestic use. Each family consumes 5-8 cartloads of fuel wood per year. There are very less number of families that have LPG/ Biogas facilities. Most of the families directly depend upon forests for fuel wood.

3.1.3. Extraction of NTFP:

Minor forest products (NTFPs) such as edible fruits, flowers, and roots are collected for local consumption. The surplus quantities are generally exported. The items collected are Tamarind, Mahuva flowers and seeds of Amla, Chironji, Myrobolans (*Ternimalia chebula*) gum from *Sterculia urens*, leaves of *Diospyros melanoxylon*, leaves of *Bauhinia vanilla* (plate leaves), barks of *Cassia auriculata* (Tangedu) and *Cassia fistula* (Rela), etc., The other items are Nux vomica, Rita, Rosagrass, etc., Tamarind forms the principal item since large quantities are collected and sold in rural centers or exported to the coastal districts. Beedi leaves constitute an important minor forest produce. The Beedi leaves units are sold to contractors who collect the leaves, cure them, store them and later the leaves are exported.

Girijan Co-operative Corporation (G.C.C.) holds the monopoly for the collection of minor forest produce in the state. In Nandyal, Kadapa, and Annamayya divisions Tamarind, honey, Mahuva seed, Chironji (*Buchanania latifolia*), and Myrobolans are collected by G.C.C. through the local people and pay them the collection charges.

Moduga (*Butea monosperma*) leaves collection: - Villagers go for collection of moduga leaves in April, and May when these leaves are abundant.

Broom Grass collection: - Villagers near hilly areas go for the collection of Broom Grass (Chipuru Gaddi)

3.2. Assessment of inputs of line agencies and other departments

3.2.1. Tribal Development Authority: - NTFP collection, laying of roads in the villages, agricultural implements, distribution of cattle, construction of school buildings, Tussar (sericulture) works.

3.2.2. MGNREGS: - SMC works, Forestry works.

3.2.3. Pradhan Mantri Gram Sadak Yojana: - Road connecting the villages to the man roads.

3.2.4. Rural Development: - Laying of small drainage systems, construction of Anganwadi centers, and other village-level developmental activities mentioned above are being undertaken in the corridor areas. In addition, the Forest Department also provides employment opportunities to local villagers through activities such as plantation works, nursery raising, and other forest-related initiatives.

CHAPTER -4

VISIONS, GOALS, OBJECTIVES AND PROBLEMS

4.1 VISION

"To restore and consolidate natural habitats and tiger corridors connecting the Nallamala Hills with the Seshachalam Hills, ensuring that the spill-over population of tigers from the Nagarjunasagar-Srisailam Tiger Reserve (NSTR) successfully colonizes remnant habitats including the Lankamalla and Sri Penusila Narasimhaswamy Wildlife Sanctuaries and the Sri Venkateswara National Park by 2033–34."

4.2 MANAGEMENT GOALS

- Identify and restore the natural habitats falling in Nagarjunasagar Srisailam Tiger Reserves-Sri Venkateshwara National Park Corridor Landscape (NSCL).
- Identify and strengthen weak links and re-establish historical connectivity of corridors in the landscape by promoting wildlife-friendly land-use practices.
- Develop and implement best practices to mitigate the impacts of developmental projects within the NSCL.
- Improve livelihoods of local communities and engage them in conservation activities
- Reduce Human-Wildlife conflict with appropriate mitigation measures

4.3 MANAGEMENT OBJECTIVES

- In the Protected Areas, they improve habitat and prey as per their management plans.
- Development and implementation of wildlife management plans in the identified Corridor areas with the help of sensitized working plans.
- Suitable modification in the existing management practices to upgrade and maintain the ecological status of the connectivity.

- Restoration of the forests in the Corridor area with a special focus on bottlenecks identified for improving connectivity
- Setup monitoring for prey-predator relationships at regular intervals prioritizing strategically important areas
- Consolidation of habitat in NSCL by integration of state-owned forest areas into the Reserved Forests
- Proposing appropriate mitigation measures for developmental projects to ensure that the connectivity remains intact.
- Involve local communities, line agencies, and other stakeholders in the management of such areas.
- Implementation of a co-existence agenda with a focus on the wildlife habitat parameters and the livelihoods / developmental needs of the local communities.
- Undertake awareness programs at various levels for better involvement and support of Corridor management.

4.4 PROBLEMS IN ACHIEVING OBJECTIVES

- Lack of coordination between intra-departmental and inter-departmental agencies for achieving objectives of the NSCL management plan.
- Working Plans are not sensitized towards management of areas as Tiger Corridors.
- Lack of landscape-scale management of areas ensuring better connectivity for wildlife.
- Lack of funds for taking up Corridor restoration activities in the bottleneck areas.
- Lack of tiger and prey monitoring outside of NSTR landscape due to insufficient staff and staff training.
- State-owned forests in key areas are not managed for the conservation of wildlife and are prone to change in land use.
- Inappropriate mitigation measures for developmental projects and reluctance of user agencies to include the mitigation measures.

- Lack of coordination between forest managers and line agencies in Corridor landscape.
- Lack of awareness among stakeholders in Corridor management including streamlining of other schemes and projects in the Corridor landscape.

4.5 STRENGTHS–WEAKNESSES–OPPORTUNITIES–THREATS (SWOT) ANALYSIS

The outcome of the SWOT analysis conducted for the conservation efforts in the region can be summarized as follows:

4.5.1 Strength:

- Presence of India's largest Tiger Reserve (NSTR) nested in a larger landscape, offering significant potential for tiger conservation.
- Connectivity with core Corridors and solid landscape linkages, facilitating the long-distance movement of wildlife.
- Source population with a considerable number of breeding females, indicating a healthy breeding population.
- Presence of refuge areas larger than 500 km^2, provides essential habitats for animals.
- Enhanced protection and prioritization of Red Sanders areas, contributing to habitat and wildlife protection.
- NSCL is critical for water security, indicating the ecological importance of the region.
- Awareness and support from user agencies and the Andhra Pradesh Government, facilitating collaborative conservation efforts.
- Encroachments of forest in minimal and a lot of forest areas have been depopulated in Southern Eastern Ghats.
- Tigers are colonizing new areas in the Corridor landscape and are breeding in areas that can sustain tiger populations.
- Very few bottlenecks for massive areas covering over 15000 km^2

4.5.2 Weaknesses:

- Habitat degradation due to repeated fires, over-grazing, weed infestation, and loss of topsoil, reducing the resilience of the habitat.
- Erratic rainfall patterns and climate change increase the dryness of the areas, posing Threats/Challenges to habitat sustainability.
- Habitat fragmentation due to developmental projects and the absence of a proper and scientific mitigation plan, hindering wildlife movement.
- Dependence of people on bamboo and Non-Timber Forest Products (NTFPs) leading to unsustainable harvest and forest fires, impacting habitat quality.
- Lack of funding and resources for fire management, resulting in irreversible habitat loss.
- Inadequate staff in large areas may jeopardize focus on species like tigers, leading to ineffective conservation efforts. High vacancies and inadequate training of frontline staff, affecting conservation efforts and wildlife protection.
- Connectivity through private lands posing Threats/Challenges for the protection and management of animals moving outside Reserved Forest areas.
- Lack of manpower for anti-poaching efforts and focus on timber protection without adequate awareness about wildlife conservation.
- Lack of coordination between forest managers and line agencies in the Corridor landscape, impeding effective conservation strategies.
- Working plans are not oriented towards managing Corridors to ensure connectivity, hindering wildlife movement.

4.5.3 Opportunities:

- Unique opportunity to manage India's largest tiger landscape in the future, spanning from NSTR to SVNP, providing a wide conservation canvas.
- Improved genetic diversity by ensuring connectivity persists within the landscape, contributing to long-term population viability.
- Development and strengthening of Protected Areas (PAs) that form part of the corridors outside NSTR, thereby supporting the long-term survival of tigers and ensuring population sustainability.

- Large areas can be managed like Sanctuaries or Conservation Reserves, ensuring improvement of forest cover and livelihood support for people.
- Utilizing the Red Sanders protection infrastructure to improve the protection of wildlife and its habitat, leveraging existing resources for conservation.
- Developmental projects can ensure better mitigation and support conservation activities in the Corridor area, aligning with wildlife management plans.
- Long-term study on changing dynamics with changing climate in the larger area, providing insights into climate change impacts on biodiversity.
- Involvement of people in fire protection and livelihood-supporting activities, fostering community participation in conservation efforts.
- Recruitment of local area staff for better forest management, utilizing local knowledge and expertise for conservation.
- Eco-tourism in Corridor areas to enhance the conservation value of the place, promoting sustainable tourism and generating revenue for conservation activities.
- Awareness creation programs for people in the Corridors, using a tiger as a mascot to improve public participation in conservation.

4.5.4 Threats:

- Organized poaching and timber felling activities pose a significant threat to wildlife populations and habitat integrity.
- Water limitations in dry landscapes, restrict habitat availability and affect wildlife survival.
- Linear intrusions like highways, railway lines, and electric lines expanding without adequate mitigation measures, leading to habitat fragmentation and wildlife mortality.

- The spread of invasive weeds reduces the productivity of an area, impacting habitat quality.
- Heavy dependence on forests for people and livestock, leads to resource depletion and habitat degradation.
- Climate change disrupts seasonality, resource crunch, and water scarcity, affecting wildlife habitats and survival.
- Migratory cattle cause degradation, spread of disease vectors, and human-wildlife conflict, impacting wildlife populations.
- Mining activities cause habitat loss and degradation, reducing vital habitat links for wildlife.
- Electric fencing indiscriminately harms wildlife, posing a threat to both prey and predators.

4.5.5 Outcome of SWOT:

The SWOT analysis conducted for the conservation efforts in the region reveals several critical insights. Strengths include the presence of India's largest Tiger Reserve, nested in a vast landscape, strong connectivity with core corridors, and a source population with significant breeding potential. Furthermore, there are refuge areas for wildlife and enhanced protection for Red Sanders habitats. The region's rich biodiversity contributes significantly to water security, and there is strong awareness and support from user agencies and the government.

However, weaknesses pose significant threats and challenges. These include habitat degradation from various factors such as fires and overgrazing, erratic rainfall patterns exacerbated by climate change, and habitat fragmentation caused by developmental projects. Lack of funding, inadequate staff training, and coordination issues among stakeholders further weaken conservation efforts.

Opportunities for improvement exist, such as managing the vast tiger landscape, developing breeding areas outside reserves, and utilizing Red Sanders protection infrastructure for wildlife conservation. Involving local communities, recruiting area-specific staff, and purchasing land to strengthen forest cover are also potential strategies. Eco-tourism can enhance conservation value, while awareness programs can boost public participation.

Yet, threats loom large. These include organized poaching and timber felling, water limitations in dry landscapes, and linear intrusions without proper mitigation measures. Invasive weeds, heavy dependence on forests, and climate change further exacerbate challenges, alongside mining activities and indiscriminate electric fencing. Addressing these threats while capitalizing on strengths and opportunities is essential for effective conservation in the region.

CHAPTER - 5

MANAGEMENT STRATEGIES

5.1 DELINEATION OF CORRIDORS AND OTHER HABITATS USED BY TIGERS AND CO-PREDATORS.

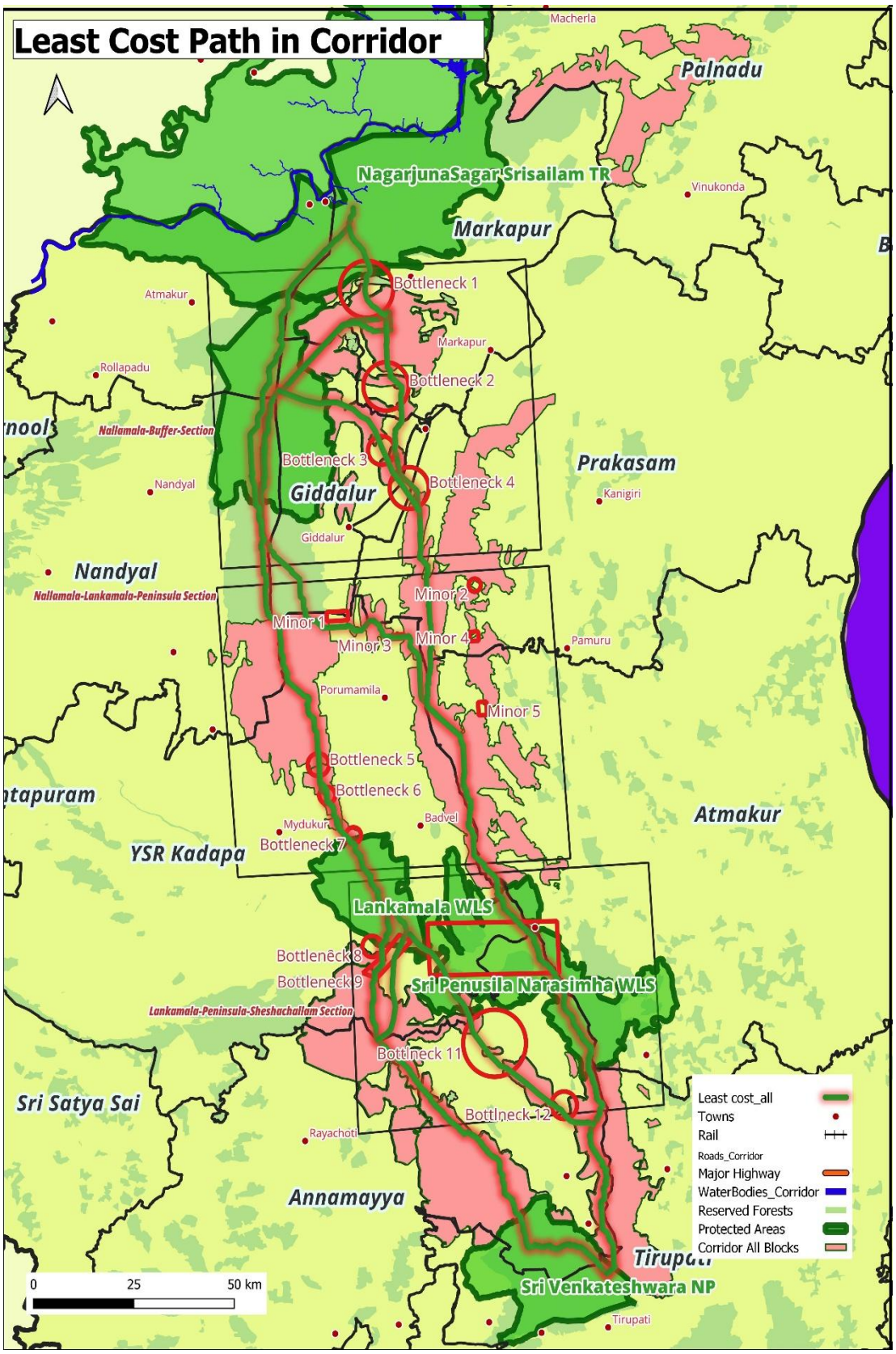
The tiger corridor has been delineated using two methods: the Least-Cost Path Method and Circuit Scape.

Least Cost Path Method

The Least-Cost Path Method is a technique used in Geographic Information Systems (GIS) and spatial analysis to determine the most efficient path between two points based on a cost surface. The Circuit Scape output is then used to identify areas of high connectivity, which form potential corridors between the start and endpoints. These areas represent the least-cost pathways for tiger movement through the landscape (Map 8).

In this exercise, we identified four solid blocks of corridors, referred to as 'Core Corridors'. Additionally, four stepping-stone corridors have been identified, along with 12 major bottlenecks to connectivity and five minor bottlenecks distributed across three corridor sections.

Map 8: Map showing Least cost map of Corridor area



5.2 MANAGEMENT OBJECTIVES

The management objectives outlined for the Corridor areas are aimed at enhancing connectivity and promoting sustainable wildlife conservation while addressing the needs of local communities. Here's a summary of the key objectives:

- **Development and Implementation of Wildlife Management Plan**: Create and implement a comprehensive wildlife management plan tailored to the specific needs of the identified Corridor areas. This plan should be integrated into sensitized working plans to ensure effective management practices.

- **Modification of Existing Management Practices:** Upgrade and maintain the ecological status of the connectivity by modifying existing management practices as necessary. This includes measures to enhance habitat quality and protect wildlife populations.

- **Forest Restoration in Corridor Areas:** Focus on restoring forests in bottleneck areas identified for improving connectivity. This involves habitat restoration efforts aimed at enhancing habitat quality and connectivity for wildlife.

- **Monitoring Prey-Predator Relationships:** Set up monitoring programs to assess prey-predator relationships in strategically important areas. Regular monitoring will help prioritize conservation efforts and ensure the health of wildlife populations.

- **Improving Prey Numbers:** Implement better protection and management strategies to improve prey numbers. This may involve habitat enhancement, anti-poaching measures, and other conservation initiatives.

- **Consolidation of Habitat:** Integrate state-owned forest areas into Reserved Forests to consolidate habitat in the Nagarjunasagar -Srisailam Tiger Reserve (NSTR) to Sri Venkateswara National Park (SVNP) corridor landscape (NSCL). This will help enhance habitat connectivity and ensure the long-term survival of wildlife populations.

- **Mitigation Measures for Developmental Projects:** Propose appropriate mitigation measures for developmental projects to minimize their impact on habitat connectivity. This ensures that infrastructure development does not compromise wildlife Corridors.

- **Involvement of Local Communities and Stakeholders:** Engage local communities, line agencies, and other stakeholders in the management of Corridor areas. Collaboration with stakeholders is essential for effective conservation and sustainable development.

- **Implementation of Co-Existence Agenda:** Promote co-existence between wildlife habitat requirements and the livelihoods/developmental needs of local communities. This involves balancing conservation objectives with the socio-economic needs of the people living in and around the Corridor areas.

- **Awareness Programs:** Conduct awareness programs at various levels to enhance public involvement and support for Corridor management. Educating stakeholders about the importance of wildlife Corridors and their role in conservation is crucial for garnering support.

Table 3 - Objectives and Mitigation Strategies Proposed for Corridor of NSTR & Seshachalam Hills

Objective	Mitigation Strategies
1) Development and Implementation of Wildlife Management Plan:	• Improving the Corridor usage maps based on field data for better conservation outcomes. • Modification of existing working plans in line with the management plan. • Implement the habitat protection, and development and reduce dependency on Corridor areas.

	● Undertake forestry activities that are beneficial to Corridors. ● Bamboo working in the coupes existing in Corridor area and timber working shall be allowed with the least disturbance to the wildlife and wildlife habitat, during the extraction of bamboo based on silvicultural methods that will enhance the productivity of bamboo where initially bamboo will be utilized as a fodder for wildlife.
1) Implementation of a co-existence agenda with a focus on the wildlife habitat parameters and the livelihoods/development needs of the local communities.	● Prompt compensation for loss of life or property of people. ● Promote stall feeding and milk cooperatives for people. ● Eco Development committees.
2) Reduction of dependency and pressure on Corridor areas for fuel, fodder, small timber, and NWFP of the people living in and near or adjoining Corridors.	● Reduce timber dependency by promoting iron implements for routine use. ● Fuel–wood dependency should be controlled by providing LPG connections at subsidized rates, reducing the contribution gradually to make a behavioral change. ● Promote rotational grazing of cattle in the park.

3) Restoration of the forest and integration of some revenue areas in the forests.	• Restoration of degraded forests (soil moisture conservation works, native species plantation, etc.,) • Adopt a watershed approach for all the Corridor Forest areas. • Linkage with social forestry and other wings for community afforestation. • Consolidate the Corridor area with an amalgamation of revenue forests, wastelands, and revenue lands. • Soil erosion control with ridge-to-valley concept, micro watershed – treatment.
4) Undertake special drives to contain the encroachments and from fresh encroachments	• Encroachments control - planning and implementation. • Establishment of a Court Liaison Unit for effectively handling and pursuing encroachment-related cases. • Formation of a 10-member ex-servicemen encroachment monitoring team to operate at the division level.
5) Set up monitoring for survey predator	• Predator monitoring surveys (sign surveys, opportunistic camera trapping, and questionnaire), monthly reports, and regular monitoring. • Prey encounter rate surveys twice a year. • Waterhole monitoring surveys.

	• Increasing staff with additional animal trackers & watchers.
6) Undertake anti-poaching activity at every range level to arrest poaching.	• Anti-poaching drives with an emphasis on Corridor areas. • Set up Anti-poaching teams (strike force and Anti-poaching camps) in vulnerable areas. • Intelligence gathering for arresting poaching. • Rewards for information relating to poaching.
7) Education programmes for capacity building of staff and stakeholders.	• Law enforcement- capacity building of the staff. • Ecological monitoring- capacity building of the field staff. • Performance enhancement programme.
8) Promotion of conservation education to the stakeholders and dependents on natural resources.	• Education programme for target groups (lawyers, honorable judges, police, reporters, youth, kids, tribals, villagers, VSS groups, EDCs etc.,) • Education about sustainable harvesting of natural resources. • Best practices propagation. • Reduction of Forest felling for NTFP and Grazing.

5.3 PRIORITIZATION OF LINKAGES

Weak links in the Corridor: - Corridors were assessed for their structural and functional connectivity. Fragmentation of corridors poses a major threat to maintaining connectivity. This challenge can be addressed by identifying weak links within the landscape and implementing measures to strengthen and restore them.

The prescription for weak links: -

- Protection in the Corridor should be given top priority. Anti-poaching squads for every range are proposed to be put in place.
- At least 5 animal trackers are to be engaged to monitor the wildlife and continuous transmission of information for each range.
- Forest restoration must be done with the plantation of indigenous species as a part of normal ongoing programmes/schemes of the Central / State Government.
- Vana Samrakshana Samithis (VSSs) present in the Corridor area will be strengthened and motivated towards wildlife conservation through awareness programmes, capacity building and engaging them in the anti-poaching squads and as animal trackers.
- These areas also should be protected from migratory cattle by vaccinating the cattle and penalizing outside-the-state cattle grazers as per rules. Cattle water tubs in fringe villages will be constructed by the Department.
- In the Corridor areas, RoFR land title deed holders may be motivated to raise silvipasture crops.

5.4 WILDLIFE MANAGEMENT IN TERRITORIAL FOREST AREAS

The objectives of management are protection and long-term conservation of wildlife. The Threats/Challenges and constraints in achieving the objectives are many. In conformity with the objectives and the Threats/Challenges, the following strategies are formulated for the management of wildlife in the division.

i) Strengthening of protection.

ii) Improvement of habitat.

iii) Awareness creation among tribals/villagers.

Strengthening of protection

Provision of vehicles for mobile parties

Numerous measures have been adopted for the protection of forests and forest land, but conditions are changing rapidly. In the light of the ingenious methods adopted by smugglers and poachers, these measures need to be adjusted suitably.

Vehicles for staff mobility and facilities for rapid communication are essential to ensure the timely detection and prevention of smuggling, poaching, and other offences. Since smugglers and poachers sometimes resort to violence, subordinate staff should be able to move in groups with agility and be equipped with mobile phones to deter poachers and unscrupulous elements from committing forest offences.

An effective and efficient informer system or secret service may be developed in vulnerable villages so that the movement of poachers and smugglers is conveyed promptly to the departmental staff for timely action.

Furthermore, cases booked under the Forest Act and the Wildlife Protection Act, 1972, should be pursued vigorously to their logical conclusion to secure convictions of the culprits. These cases may also be highlighted in the villages to create awareness and act as a deterrent.

Evaluation of threats at strategic locations

There is high biotic pressure on this corridor area due to cattle, goats, and sheep from native villages. About 2,00,000 to 4,00,000 cattle and goats enter the corridor area for grazing. The forests are easily accessible from the villages, which enables poachers to use alternate routes and deviate from usual paths, thereby misleading the anti-poaching staff. However, periodic and frequent raids into suspected villages and routes commonly used by poachers may help reduce the occurrence of offences.

Prey bases such as spotted deer, nilgai, and sambar, as well as carnivores like leopards and tigers, are regularly monitored. To protect the fauna and flora, it is essential to establish base camps, deploy anti-poaching squads, and engage animal trackers at strategic locations within this corridor area.

Establishment of base camps/Anti-poaching: -

This track of the corridor already has existing base camps. In each base camp, five protection watchers are present. The protection watchers employed are local tribal people, such as Chenchus in GBM, Yanadis in Sri Lankamalleswara Sanctuary, or people from adjacent villages to the forest.

The present status of existing base camps in this corridor is as follows: for strengthening the base camps, the following infrastructure provisions such as semi-permanent sheds for shelter, uniforms, shoes, torchlights, rations, medicines, etc., should be provided. They are supposed to maintain registers, including details such as areas perambulated, offenders caught, animal sightings, condition of forest areas, daily patrols, and provisions issued.

Table 4: Base Camps Existing and Proposed in the Corridor of NSTR & Seshachalam Hills

SI. No.	Division	Exisiting Base camps/APCs	Proposed Base camps	Total
1	Nandyal	4	4	8
2	Kadapa	5	4	9
3	Tirupathi	3	3	6
4	Annamayya	5	3	8
5	Nellore	7	13	20
	Total	**24**	**27**	**51**

STRIKING FORCE:

Existing manpower and resources will be utilized.

Table 5 - Striking Force Parties existing and additional requirement in the Corridor of NSTR & Seshachalam Hills

Sl. No.	Division	Existing number of Strike Force Parties	Additional Requirement	Total
1	Nandyal	0	2	2
2	Kadapa	6	7	13
3	Tirupathi	3	5	8
4	Annamayya	5	0	5
5	Palnadu	0	1	1
6	Prakasam	1	2	3
7	Giddalur	1	2	3
8	Nellore	3	3	6
	Total	**19**	**22**	**41**

ANIMAL TRACKERS:

Animal trackers are employed to track and locate the movements and presence of animals in the forest areas. They report the movement of animals to the concerned Range Offices, from where the information is communicated to the respective Division Offices. This system helps in mitigating crop damage and man-animal conflicts.

The present number of animal trackers available in each division is as follows:

Table 6: Animal trackers available and additional requirement in the Corridor of NSTR & Seshachalam Hills

Sl. No	Division	Existing number of Animal/Tiger trackers	Additional requirement of Animal/Tiger trackers	Total
1	Kadapa	0	10	10
2	Tirupathi	0	15	15
3	Annamayya	0	20	20
	Total	**0**	**45**	**45**

RESCUE VAN:

One rescue van is to be provided for each territorial division, equipped with facilities such as a net, ladder, cage, and first-aid box for rescuing wild animals that stray into human habitations or for attending to injured or sick animals. It is also proposed to procure tranquilizing guns and darts, and the staff should be well trained for this activity.

RESCUE AND RESEARCH STATION:

Research stations are present in NSTR and SV National Park and have also been recently established at Tirupati. This corridor connects the viable habitats of two source populations, and the sink areas also require a research station, which will help in addressing issues scientifically with trained personnel.

A team led by an Assistant Director of Veterinary Sciences or a Deputy Director of Veterinary Sciences should head the station. The necessary infrastructure and equipment should also be provided for the proper functioning of the research station. A feasible location is Mahanandi, as an Environmental Educational Centre (EEC) building already exists in the locality.

FIRE MANAGEMENT:

Surface fires are common in this tract of forest from February to May every year. Specifically, in Sanctuary areas — on average 5 fire lines of 5 km stretch per Range each are present. These were maintained every year. Apart from this 100 km of fire line is to be created every year in each territorial division in fire-prone areas prioritizing the vulnerability. The sanctuary area is to be taken first. Two protection watchers for

every 5 km stretch of the fire line should be employed for maintenance and to ensure protection. Firefighting equipment should be provided.

Following steps are proposed for fire management.

Step 1: Proper zonation of NSTR for Vulnerability of Fire.

- Historical fire data can be used as input for understanding the regularly burned areas in NSTR.
- The causes of fires must be identified at the beat level in the past and possibility in the future.
- Vegetation map along with other factors to be used to develop range level fire risk Zonation.

Step 2: Prevention and Preparedness:

- Implement measures to prevent human-caused fires through public awareness campaigns, education, and enforcement of fire safety regulations.
- Develop and maintain firebreaks, fuel breaks, and infrastructure to create defensible space and reduce the spread of wildfires.
- Conduct regular training and drills for fire personnel and local communities to enhance readiness and response capabilities.
- Equip staff with firefighting equipment that includes blowers, tankers, safety gear etc.

Step 3: Early Detection and Monitoring:

- Establish a robust system for early detection of wildfires, including the use of fire towers, live updates from NRSA, and community-based monitoring networks.
- Integrate satellite data, weather forecasts, and fire behavior models to assess fire risk and anticipate potential fire events.
- Utilize drones and other aerial platforms for rapid assessment and monitoring of fire incidents in remote or inaccessible areas.

Step 4: Suppression and Control:

- Develop coordinated response protocols and mobilize resources, including firefighting crews, equipment, and aircraft, for timely suppression of wildfires.

- Prioritize suppression efforts based on risk assessment, ecological values, and threat to human safety and infrastructure.
- Employ both ground and aerial firefighting tactics, including controlled burns, water drops, and Fireline construction, to contain and extinguish wildfires effectively.

Step 5: Ecological Restoration and Recovery:

- Assess post-fire impacts on ecosystems and prioritize restoration efforts to mitigate habitat loss and promote recovery of biodiversity.
- Implement revegetation and erosion control measures to stabilize burnt areas and prevent soil erosion and degradation.
- Monitor post-fire vegetation dynamics, wildlife populations, and hydrological processes to inform adaptive management strategies and promote ecosystem resilience.

Step 6: Community Engagement and Collaboration:

- Foster partnerships and collaboration among government agencies, non-profit organizations, local communities, and indigenous groups to address fire management Threats/Challenges collectively.
- Involve stakeholders in decision-making processes, fire planning, and implementation of fire management strategies to ensure inclusivity and ownership.
- Provide education and outreach programs to raise awareness about the ecological role of fire, fire safety practices, and the importance of community involvement in fire management efforts.

WIRELESS NETWORK:

For better sharing of information and effective communication, every range in this tract of Corridor should be provided with a wireless set. Thus a total of 26 wireless sets are required for five territorial divisions.

WATCH TOWER:

Watch towers are to be constructed at appropriate places in interior areas of the forest to detect fire incidences. It can be used to know the movement of animals and for checking the movement of illicit trespassers. Watch towers are present in a few patches of this Corridor in GBM and Sri Lankamalleswara Wildlife Sanctuaries.

Table 7- Watch Towers existing and additional requirement in the Corridor of NSTR & Seshachalam Hills

SI. No.	Division	Existing watch towers	Additional requirement of watch towers	Total
1	Nandyal	1	3	4
2	Kadapa	2	4	6
3	Tirupathi	2	2	4
4	Annamayya	2	2	4
	Total	**7**	**11**	**18**

CHECK POSTS:

Check posts in prevailing road routes are to be maintained to control the speed of vehicles and for strict vigilance of movement of people inside the forest areas. They should be regulated by the Forest Department staff as well as check-post watchers (two watchers for each check-post) taken on an outsourcing basis. The status of existing check posts in this Corridor is given below.

Table 8: Check Posts existing and additional requirement in the Corridor of NSTR & Seshachalam Hills

SI. No.	Division	Existing check posts	An additional requirement of check posts	Total
1	Nandyal	2	2	4
2	Kadapa	3	1	4
3	Tirupathi	2	1	3
4	Annamayya	2	2	4
	Total	**9**	**6**	**15**

5.5 IMPROVEMENT OF HABITAT: -

WATER RESOURCE MANAGEMENT

Works to be done to ensure water availability to wildlife in Corridor area:

- Present status of drinking water for wildlife in the Corridor: Animals require water for several reasons - digestion and metabolism, reducing body temperature, and removal of metabolic waste. Most wildlife can survive without food for a couple of days, but water is essential every day. The availability of properly distributed standing water usually enhances the wildlife population. The habitat of wildlife must include a permanent water source, or the animal will have to move to areas with water during dry weather. Wild animals will not inhabit areas too far from water, even if food and cover are abundant.
- Natural water resources like open wells, waterholes, and perennials.
- Streams seen throughout the tract of forest are depicted on a map.
- Many natural springs also exist in the area. Besides these, several big dams, small and big tanks, and check dams have been constructed over the years. Of all these water sources, perennial rivers and nullahs, small and big tanks, natural springs, and check-dams having water throughout the year have been identified and marked in the enclosed map.

5.5.1 PROPOSED WORKS:

In Gundla Brahmeswaram and Sri Lankamalleswara Wildlife Sanctuaries for the protection of wildlife, artificial water resources like saucer pits, check dams, and percolation tanks were constructed. About three-fourths of the area of the Corridor has water sources while one-fourth of the area has no such source. In the coming 10 years, suitable arrangements must be made for ensuring water availability where no water source is available.

The following structures should be constructed and maintained to ensure water availability:

Solar pump sets:

- To facilitate the continuous water supply, especially in the summer season in interior forest areas where electricity is a problem, solar pump sets to be

established, one solar pump set for each range in the appropriate area should be built. Thus, a total of 11 Solar pump sets should be provided.

- ***Construction of saucer pits***: Saucer pits have already been constructed in GBM Sanctuary and Sri Lankamalleswara Wildlife Sanctuary. A total of 125 additional saucer pits can be constructed in the remaining forest areas.
- These Saucer pits are to be filled with water in the summers by hiring tankers.

Formation of Percolation Tanks (PTs) & Check Dams:

- Existing percolation tanks & check dams in sanctuary areas are depicted on the map. In the remaining tract PTs & check dams are to be constructed to store the water.
- To ensure water supply throughout the year to wildlife the following measures are to be taken.
- Deepening of water holes and desilting of existing open wells in the forest areas are to be carried out and maintained.
- The areas located near the revenue areas can easily be accessed. In these grids water availability will be ensured by installing hand pumps. Saucers will be constructed 50 to 100 meters away from the hand pumps and connected to the pumps through open channels.
- At places where it is not possible to install hand pumps, the saucers will be filled through water tankers. These hand pumps can be installed at any suitable location in the grids.
- In the Corridor area it has been observed that most of the perennial rivers/nallah have a continuous flow of water till the end of February/March after which the water is available only in small pools.

Tasks related to wildlife management to be done on a regular basis in the Corridor area:

- Cattle belonging to the existing villages of the weak links of the Corridor should be vaccinated every year.

- Strict patrolling, especially during the summer season, should be conducted by the field staff of respective divisions at the water holes in the Corridor area. A strict check should also be kept on individuals using electrocution to kill wild animals at these spots.
- To gather information on the movement of tigers in the Corridor, samples of their droppings/urine will be collected and sent for DNA testing to C.C.M.B., Hyderabad.
- In cases of human loss/human injury/cattle loss/crop damage by wildlife, the aggrieved party will be provided relief immediately and the final compensation will be awarded at the earliest. This will help in creating an atmosphere of trust among the people towards the forest department.
- Several forest ranges in the Corridor should be provided with vehicles for wildlife protection.
- Special patrolling groups will be constituted during the rainy season to carry out regular patrolling.
- Camps will be organized periodically to create awareness among the local people towards wild animals. NGOs will be asked to assist in such camps. Public representatives will also be invited to such camps.

WORK TO BE DONE FOR RE-ESTABLISHMENT OF BAMBOO IN CORRIDOR AREA: -

Bamboo forests occupy a position of great importance in this tract of Corridor. Not only do these bamboo forests provide food to wildlife, but they are also a source of ideal habitat for all kinds of wildlife. Even tigers find a suitable habitat in bamboo forests.

The main species of bamboo found in this tract of Corridor are *Dendrocalamus strictus* and *Bamboosa arundinacea.*

Table: 9- Name of bamboo series in Nandyal Division: -

Sl. No.	Name of bamboo series	Total area (Ha)	Effective area (Ha)
1	Basavapuram	3120	505

2	Dongabhavi	2116.495	573
3	Dorabhavi	2555.962	538
4	Pacherla	1412.50	380
5	Kotakonda	3599.95	1195
6	Pachagundala	4271.50	1018
7	Chillamanipenta	3111	1222
8	Mamidimanu Chelama	5384.78	1474
9	Ahobilam	4398	1317
10	Utla	2900.50	895
11	Garella	4952.50	1354
12	Gorreguntla BC	4048.87	947
	Total	**41872.057**	**11418**

- Of these 12 coupes Basavapuram and Dongabavi series are just abutting to GBM sanctuary. Bamboo extraction shall be regulated in these coupes.
- The whippy Red Sanders regeneration, which is repeatedly dying due to fires may be cut back with a sharp axe flush to the ground to allow the seedling coppice regeneration to come up.
- Soil and Moisture conservation measures like Gully plugging and Staggered contour trenches will be taken up to improve the moisture regime and thus improve the growth of the Red Sanders.
- Preferential treatment is to be given to the seedlings and saplings. Removal of Bodha grass should be taken up within a 2 Mt radius of the saplings and soil working should be taken up with 0.5 Mt. Radius to the saplings of Red sanders species should be taken up to boost up the growth of the saplings and Semi-circular trenches of 1.3 M x 0.5 M x 0.5 M size are to be dug on the upper side and form mounds with excavated soil on the lower side of the saplings.
- Fire tracing operations will be carried out along the margin of bridle paths, cart tracks, compartment boundaries, and around the regeneration areas and plantations to prevent the spread of fire. These operations should be done in December – January every year.

- Strict protection from grazing shall be ensured at least for a period of 5 years. Bamboo coupes and other plantations may be harvested with permission of Prl.Chief Conservator of Forests, Wildlife and according to working plan.

PUBLICITY & EXTENSION: -

The creation of awareness and publicity is very essential for biodiversity conservation. Without the support of the stakeholders, it would be difficult to protect any natural resource. Conducting natural camps for the students and public is the one of the means of publicity.

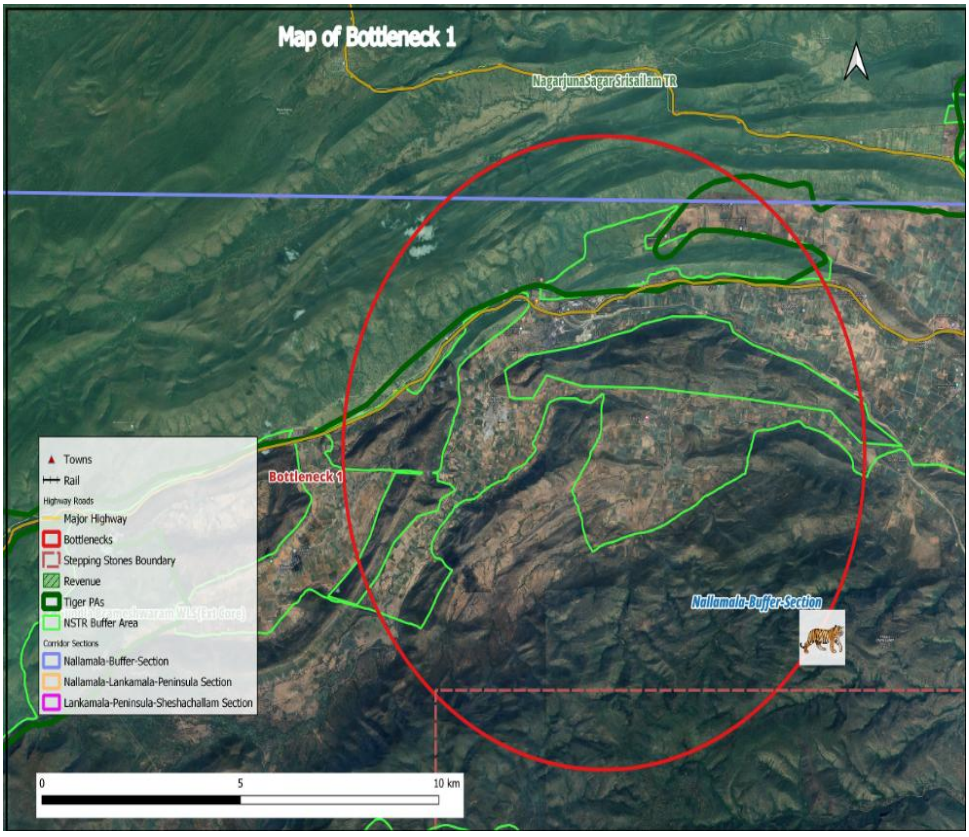
5.6 PROPOSED MANAGEMENT FOR BARRIERS (ARTIFICIAL / NATURAL) FOR BETTER CONNECTIVITY IN THE CORRIDOR

INTRODUCTION: -

The entire Corridor area from the buffer of NSTR to SVNP is about 150 km. As explained in section 1.1.5, the entire Corridor can be divided into 6 blocks and 3 major sections. To ensure continuity of the connectivity helping movement of animals there are 12 major and 5 minor bottlenecks identified in the Corridor landscape. Additionally, there are 4 stepping-stone Corridors identified in the landscape. Please refer to map 10 to 26 for details. Based on the proximity and for making effective management of Corridors for such a huge landscape spread across nandyal, kadapa, Annamayya, Tirupati, Nellore, Palnadu, Prakasam Districts, nandyal, Kadapa, Annamayya, Tiupati, Nellore, Prakasam, Giddalur, Palnadu Divisions, and Rudravaram, porumamilla, Onipenta, Badvel, sidhout, kadapa, Proddatur, Vontimitta, rajampeta, chitvel, sanipaya, kodur, balapalli, Tiupati, Bhakarapeta piler, rapur, udaygiri, vinukonda, kanigiri, atmakur, SPSR Nellore, Giddalur & Bestavaripeta Ranges. NSCL Corridor plan includes a prescription for the management of each section namely the NSTR Buffer Corridor Section, Nallamala-Lankamalla Corridor Section, and Lankamalla-Seshachalam Section with an objective to reduce bottlenecks to connectivity.

NSTR Buffer Corridor Section: The buffer area forest connects with Block 3 of the Corridor. There are 4 ‘Bottlenecks’ with one stepping stone Corridor identified to ensure functional connectivity of the landscape.

Map: 9- Bottleneck Name: Section 1_Bottleneck1



Brief Distribution of the Bottleneck:

Connectivity Matrix: Connecting Core Area with Buffer. The shortest distance of connectivity needed is 200 mt and the longest distance of connectivity needed is 1 km. There is already tiger movement and activity in the buffer area of Markapur Range.

Strengths: Breeding population in the Dornal Range of Markapur Division that can be structurally connected with the buffer area. The gaps are very small with 100-200 mt with revenue areas in between two blocks.

Weakness: There is a proposed reservoir that can potentially submerge a lot of areas and make the Corridor unviable. The forest here is in the hills and it is difficult for animals to traverse. Kurnool-Guntur Highway crosses this bottleneck and is proposed to be doubled. The agricultural lands grow cotton and chilly, this could be in response to crop depredation by herbivores. The forests are prone to fires and over-grazing.

Opportunities: Connectivity can be established through forests and mosaic corridors. During road expansion, provisions for eco-bridges or underpasses can be made to

maintain connectivity. The habitat also provides opportunities to undertake studies on human-wildlife conflict and develop effective mitigation measures.

Threats/Challenges: The road project and the submergence might leave with very little possibility of connectivity. The huge forest edge makes it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained.

Management Inputs:

i. Land purchase and declaration of revenue forest as Reserved Forests would be very useful to strengthen this Corridor. There is an opportunity for 200 acres at least.

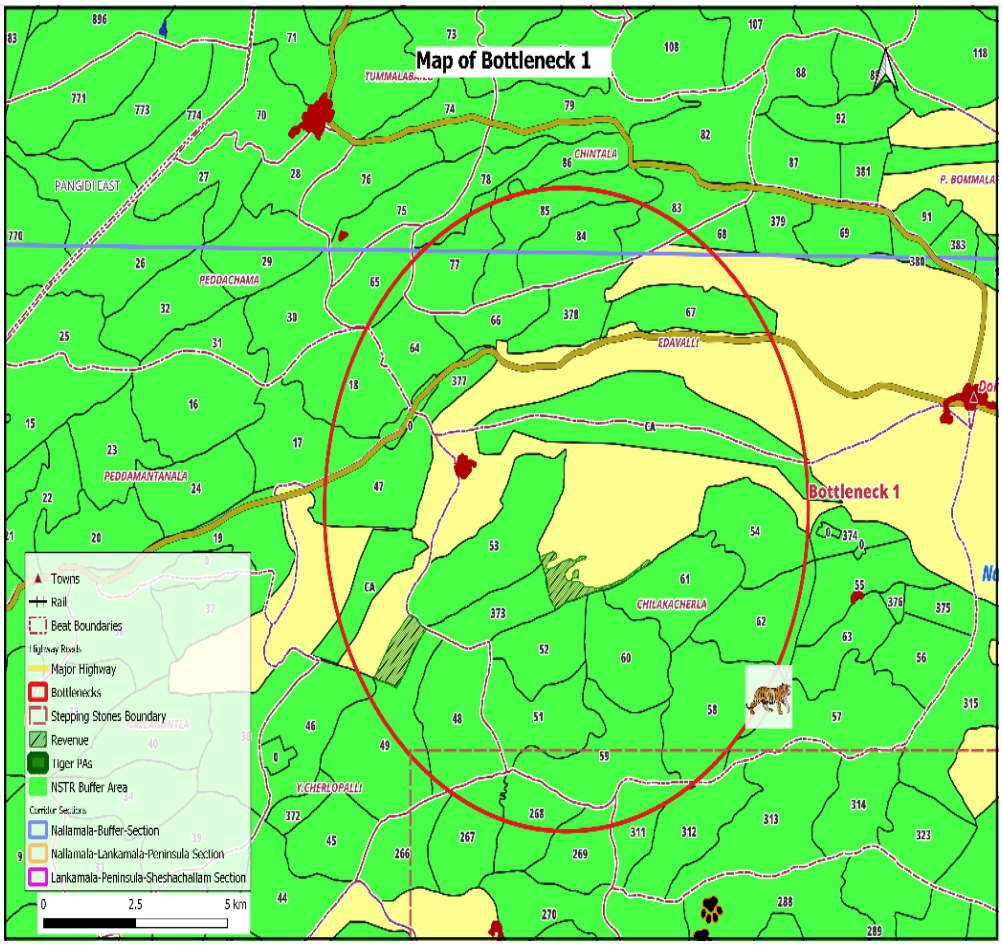
ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of Core areas with forested habitat in the Markapur Range.

iii. In case of submergence of habitat, study should be taken up to reduce loss of connectivity and opportunities for tapping water and restoring connectivity.

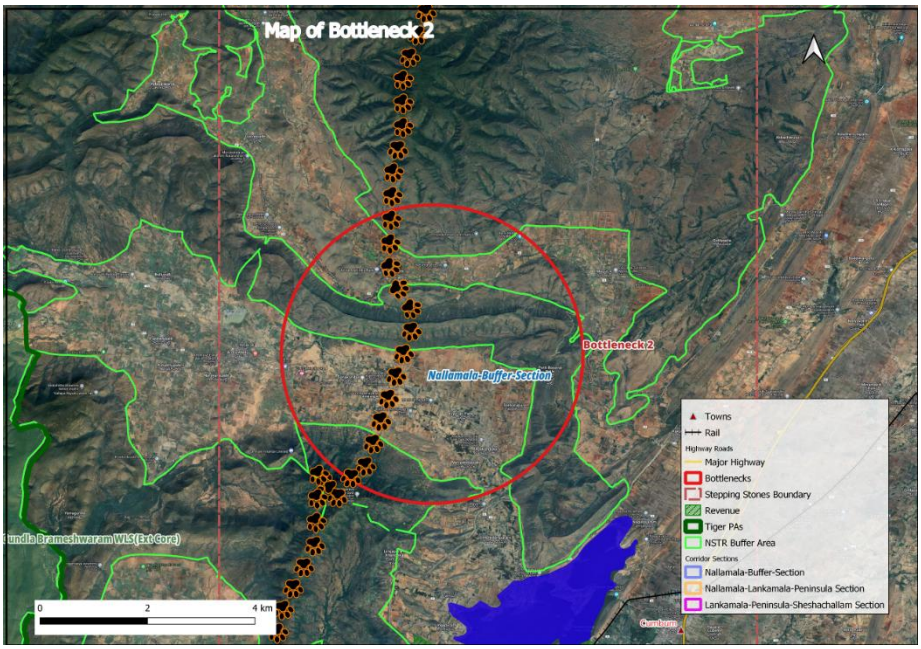
iv. The corridor area, located in the drought-prone region, already supports diverse agroforestry systems that enhance resilience and livelihoods while also strengthening ecological functions. Practices such as multi-tier planting, boundary hedgerows, block plantations, agri-horti and silvi-pastoral systems, along with apiculture and assisted regeneration/afforestation, not only improve soil health, water conservation, and income security for local communities but also contribute to habitat continuity. By sustaining tree cover, fodder, and green patches, these systems play a crucial role in maintaining corridor connectivity for wildlife movement in the drylands.

v. There should be priority of addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

vi. All the electric lines passing through this area should be insulated to reduce the chances of electrocution.


Map of Bottleneck 1
Bottleneck 1
PANGIDI EAST
PEDDACHAMA
PEDDAMANTANALA
CHINTALA
EDAVALLI
CHILAKACHERLA
Towns
Rail
Beat Boundaries
Major Highway
Bottlenecks
Stepping Stones Boundary
Revenue
Tiger PAs
NSTR Buffer Area
Nallamala-Buffer-Section
Nallamala-Lankamala-Peninsula Section
Lankamala-Peninsula-Sheshachallam Section
0
2.5
5 km

Map: 10 - Bottleneck Name: Section 1_Bottleneck2



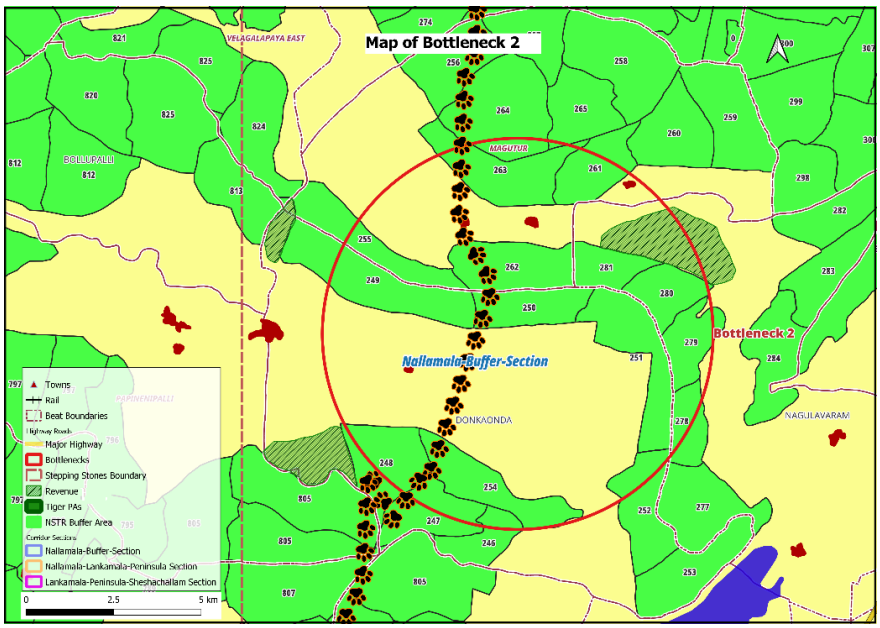
Brief Distribution of the Bottleneck: A narrow ridge of hardly 1 km runs from West to East and is divided between Magutur Beat in the North and Donakonda Beat in the South. Further, the Donakonda forest is continuous with the Papinapalle beat of the Turimella Range of the Giddalur Division. Papinapalle is extension of GBM WLS. The shortest distance of connectivity needed is 1 km and the longest distance of connectivity needed is 4 km. There are over 200 acres of revenue forest available that can be utilized to connect the gaps. The construction of Veligonda Tunnel No.2 would lead to the bringing of water to the Markapur area which can isolate the Corridor completely.

Strengths: Connects the Markapur and Giddalur Buffer areas forging vital connectivity. The habitat mosaic ensures that there is structural connectivity. No Major roads or railway lines pass through this area. Tigers are already dispersing out from Turimella Range and currently occupying the buffer area.

Weakness: There is weak connectivity and linear strips of hills which are steep, rock, and generally dry making it difficult for animals to traverse. There is a long end of forest in the bottleneck which can make protection very difficult. The agricultural lands grow cotton and chilly and this could be in response to crop depredation by herbivores. The forests are prone to fires and over-grazing.

Opportunities: The connectivity can be established through forests and mosaic Corridors. The revenue forests in this area can be added to Reserved Forest. The area makes a classic case of stepping stone Corridors and studies of how animals use these areas would be vital for future planning in the larger landscape. The backwaters of Pula Subbaiah Veligonda Reservoir will have massive open grazing-friendly lands in the dry season with minimal human habitations, these can be utilized for fodder development, as Corridor areas and ecotourism zones.

Threats/Challenges: Monitoring is difficult due to the long edge of the forest and the huge gap between the forests. The huge forest edge makes it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained. The submergence of forest lands due to Veligonda Reservoir and loss of connectivity.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor, there are about 200-300 acres of land of state-owned forest that can be notified as Reserved Forest.

ii. The current crop pattern may not be very wildlife friendly, there should be Agro-forestry and habitat restoration done with the help of local communities.

iii. Priority should be given to addressing forest fires and cattle grazing in the bottleneck areas, with the active involvement of local communities.

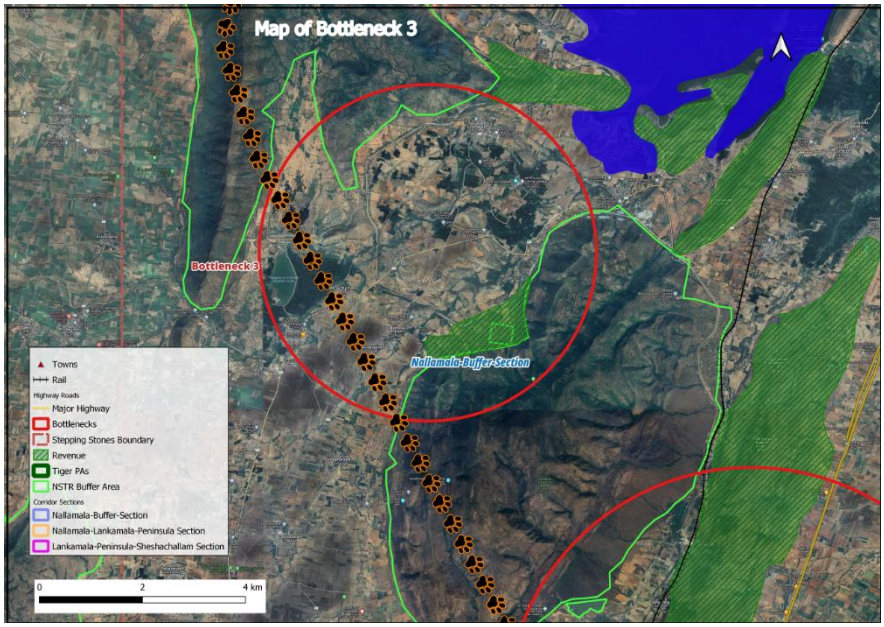
iv. All the electric lines passing through this area should be insulated to reduce the chances of electrocution. Education and awareness programs should also be taken up in these areas.

v. The dry areas of the Pula Suabbiah Veligonda Reservoir should be proactively used for fodder development and the development of seasonal Corridors.

Bottleneck Name: Section 1_Bottleneck 3:

Brief Distribution of the Bottleneck: This bottleneck is in the buffer area of the Giddalur Division. It essentially falls in Turimella Section connecting Turimella beat with J.B. Krishnapuram Beat. There is an isolated cluster of hillocks in JB Krishnapuram Beat that is further connected with Revenue forests. Racherla to Cumbum Road passes through this bottleneck. The only connectivity that is possible is through agricultural land that separates the forest for a width of 4 km.

Map: 11 - Bottleneck Name: Section 1_Bottleneck3



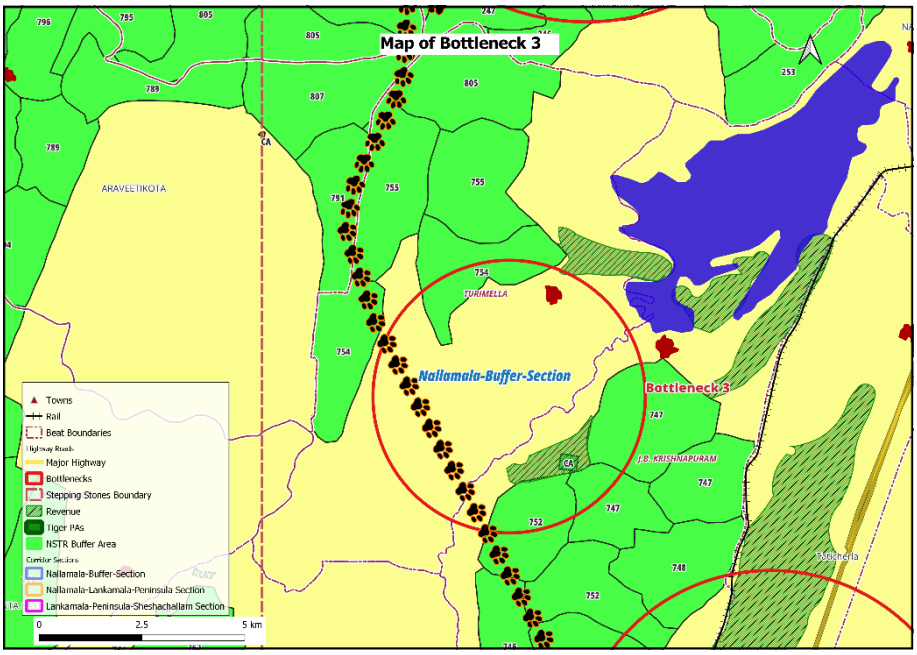
Strengths: The areas of Turimella Beat branch out from GBM, and this range is part of GBM, which has one of the highest tiger densities among all the ranges of GBM. Tigers have colonized Papinenipalli and have even been reported in revenue forest areas.

Weakness: The gap between the two forest patches is stretched up to 4 km, with intensive agriculture in between. In the JB Krishnapuram Beat, the dry, undulating hilly terrain may not provide a very conducive habitat for wildlife. The road passing

through this block is marked for expansion, making it difficult to implement any mitigation measures. The crops grown here are not wildlife-friendly, and there is a significant risk to habitat connectivity and animal movement.

Opportunities: The connectivity can be established through forests and mosaic Corridors. The road is not major and there are culverts which are present that can be used as linear Corridors. There are about 300-400 acres of forest that can be acquired to strengthen the Corridor connectivity.

Threats/Challenges: The road project and the submergence might leave with very little possibility of connectivity. The huge forest edge makes it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. The current crop pattern may not be very wildlife friendly, there should be Agro-forestry and habitat restoration done with the help of local communities.

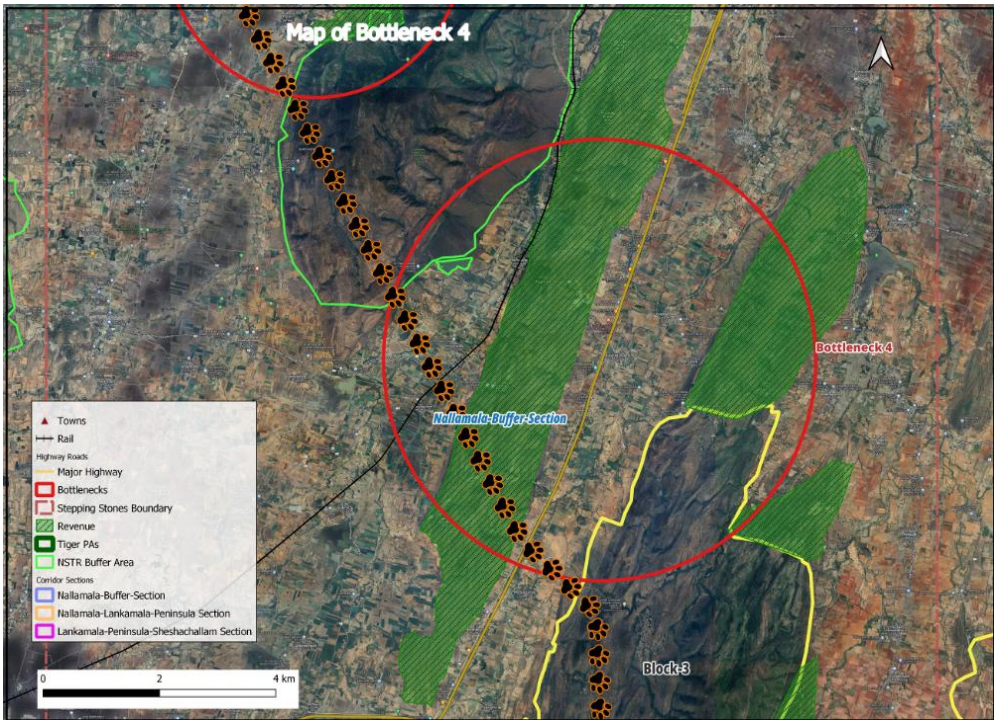
iii. Priority should be given to addressing forest fires and cattle grazing in the bottleneck areas, with the active involvement of local communities.

iv. All the electric lines passing through this area should be insulated to reduce the chances of electrocution. Education and awareness programs should also be taken up in these areas.

Bottleneck Name: Section 1_Bottleneck 4:

This area lies mainly in J.B. Krishnapuram Beat with connectivity to Tattiherla of Bestavaripeta Range of Prakasham Division. There are over 5000 hectares of 'state-owned forest' which can aid the connectivity. The Guntakal-Vijaywada railway line and Giddalur Cumbum road are the major highways. If we consider Revenue Forest as contiguous then there is hardly a kilometer of gap between the two blocks ie.. the Revenue Forest and Tatticherla beat forest.

Map: 12- Bottleneck Name: Section 1_Bottleneck4

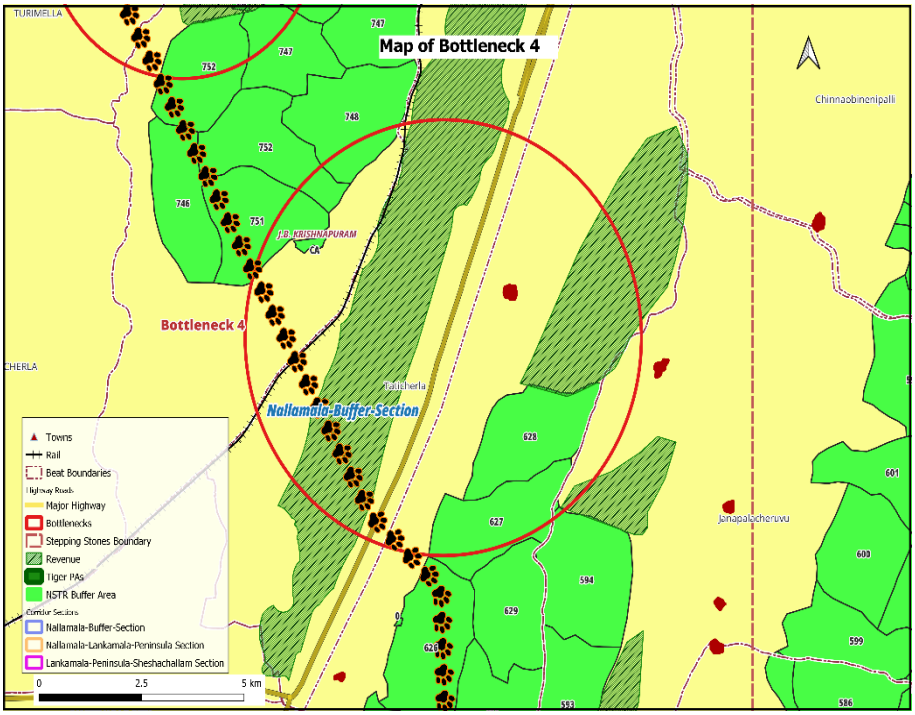


Strengths: There is a lot of potential for adding new forest blocks. This is a very important block for the connectivity of Cumbum RF with Veligonda West RF.

Weakness: The forest here is very patchy, and dependence on the revenue forest for connectivity is not ideal. The Guntakal-Vijaywada Railway line will be fast-tracked for mobility, and the road passing through the block connecting Giddalur Cumbum needs to be managed and taken up in a mitigation plan, despite not crossing any Forest area.

Opportunities: The connectivity can be established through forests and mosaic Corridors. The future rail or road upgrade can allow some eco-bridges or underpasses to be kept for connectivity.

Threats/Challenges: The road and railway line existing well outside the Reserve Forest make it very challenging to implement any mitigation measures. The lack of existing connectivity and the presence of a long forest edge make it difficult to manage poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be controlled.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful for strengthening this Corridor.

ii. The current crop pattern may not be very wildlife-friendly; there should be Agroforestry and habitat restoration done with the help of local communities.

iii. Priority should be given to addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

iv. All the electric lines passing in this area should be insulated to reduce the electrocution. Education and awareness should be taken up in these areas.

5.6.1 Nallamala to Lankamalla Corridor Section:

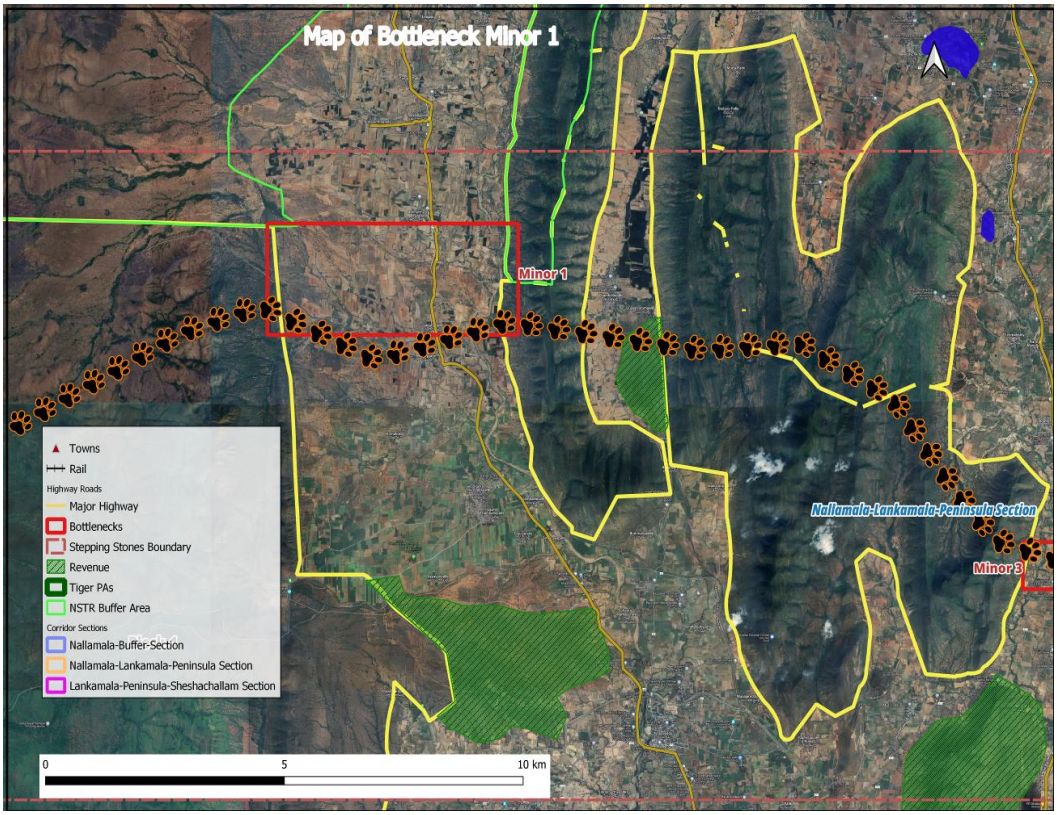
The buffer of NSTR extends to the eco-sensitive zone of NSTR, which is about 15 km from the boundary of GBM. The corridor is contiguous, identified as the 'Core Corridor' and designated as Block-1, forming a continuous forest south of the buffer area until it reaches the Mydukur–Porumamilla road in the south.

The Kancherlamoram Hills form a minor undulating hill range running south to north, connecting the Lankamallais in the south and Nallamala in the north, located within the Badvel and Proddatur forest ranges, forming a "chicken-neck" type corridor. These areas have around three key bottlenecks, each affected by roads passing through them. Managing these linear intrusions is essential to ensure functional connectivity of the landscape. The Mydukur–Badvel road passing through this section spans about 3.5 km.

Bottleneck Name: Section 2_Bottleneck Minor 1

This bottleneck has a relatively large 4 km gap. The area does have connectivity with scrub forest along with a stream network that connects the two blocks, Pedda Bavi and Mammilapalli beats, in the Thamballapalli Section of Porumamilla Range. The Porumamilla - Giddalur Road, which is "State Highway 394," passes through this bottleneck.

Map 13: Bottleneck Name: Section 2_Bottleneck Minor 1

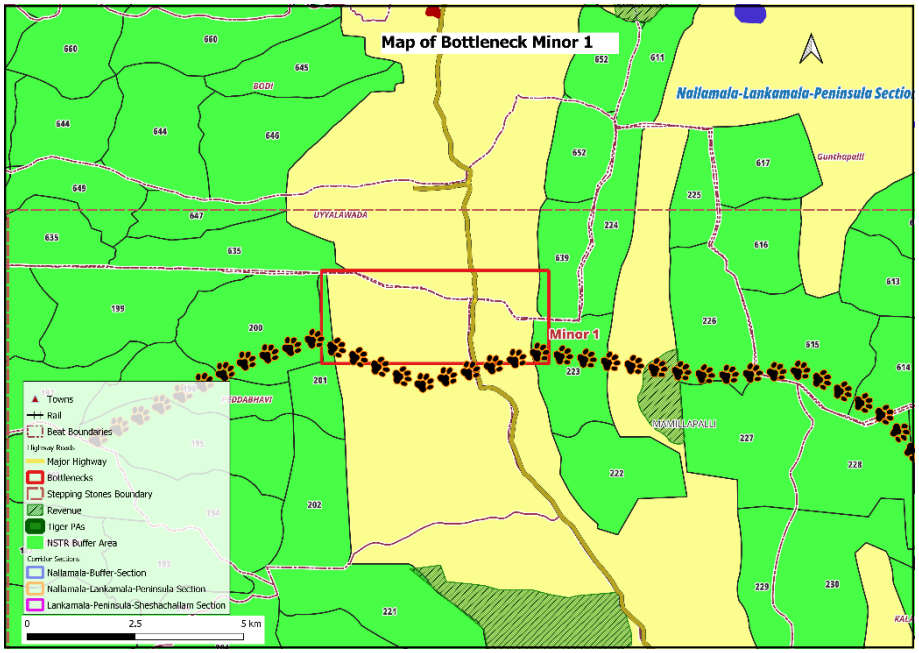


Strengths: There is a solid block of forest on the western side of the bottleneck, where there is a breeding population in the Porumamilla Range and Giddalur Ranges of the Ahobilam Proposed Sanctuary. The sub-adults or dispersing individuals can act as the source population for dispersal. There are past records of tigers being reported on the eastern side of the corridor.

Weakness: There is a large hard edge to the forest, and the connecting block of Mammillapalli in Porumamilla is not a large forest patch. The State Highway 394 passes through this section, and it is difficult to implement any regulations as the road runs entirely through revenue areas.

Opportunities: The connectivity can be established through a mosaic Corridor using the existing forests, taking advantage of forest streams connecting the two blocks that make the road also have culverts and underpasses that animals are bound to use. It would be very useful to study the linear Corridors through the streams.

Threats/Challenges: The road poses a major challenge, and the 4 km gap makes it very difficult for animals to navigate through. The large forest edge makes it challenging to manage poaching or prevent infiltration attempts. Crop protection using electric lines can be lethal and should be controlled.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. The existing culverts should be managed with a funnel-like structure for connectivity.

iii. The current crop pattern may not be very wildlife friendly, but there should be Agro-forestry and habitat restoration done with the help of local communities.

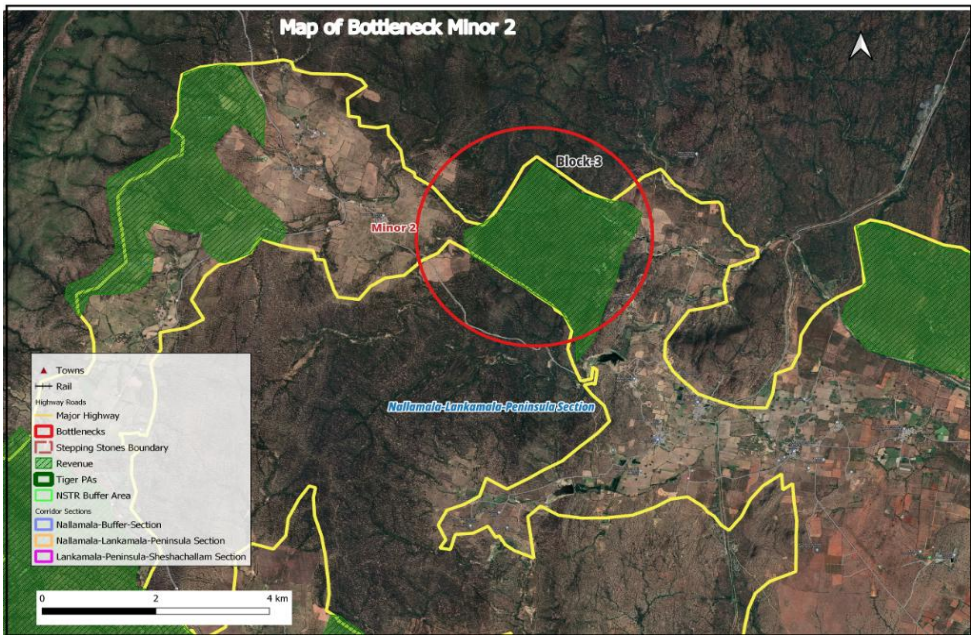
iv. There should be a priority on addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

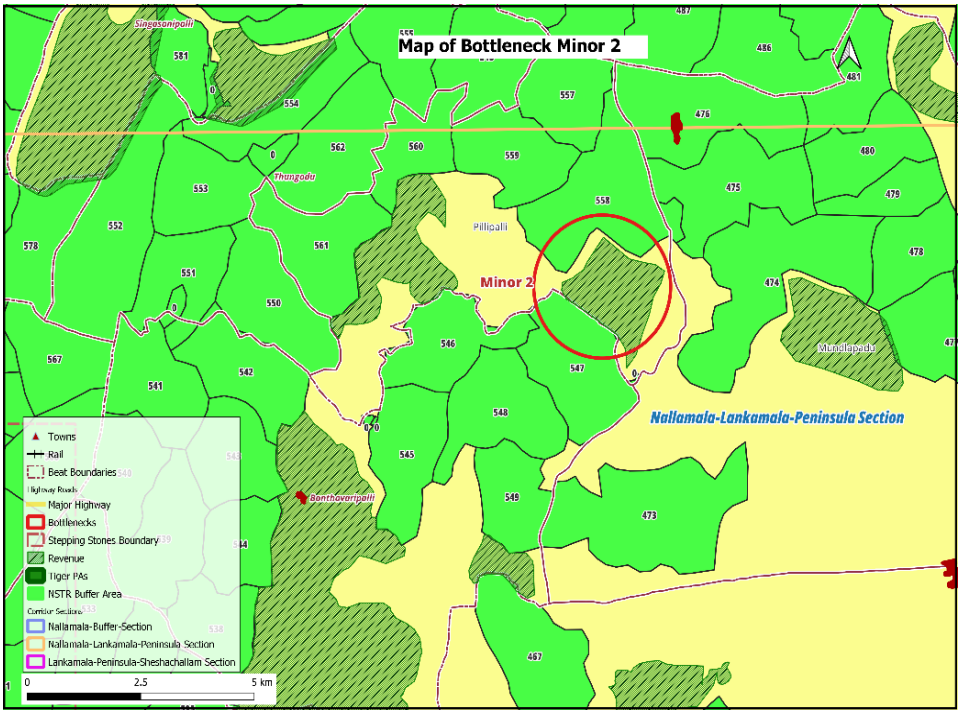
v. All the electric lines passing in this area should be insulated to reduce the chances of electrocution.

Bottleneck Name: Section 2_Bottleneck Minor 2:

This bottleneck can help establish connectivity by making the revenue forest of over 1000 acres between Mundlapadu, Bontavaripalli and Bestavaripeta Beats of Prakasam Division. For all practical purposes, these bottlenecks are connected, they only need consolidation of Reserved Forest areas.

Map 14: Bottleneck Name: Section 2_Bottleneck Minor 2

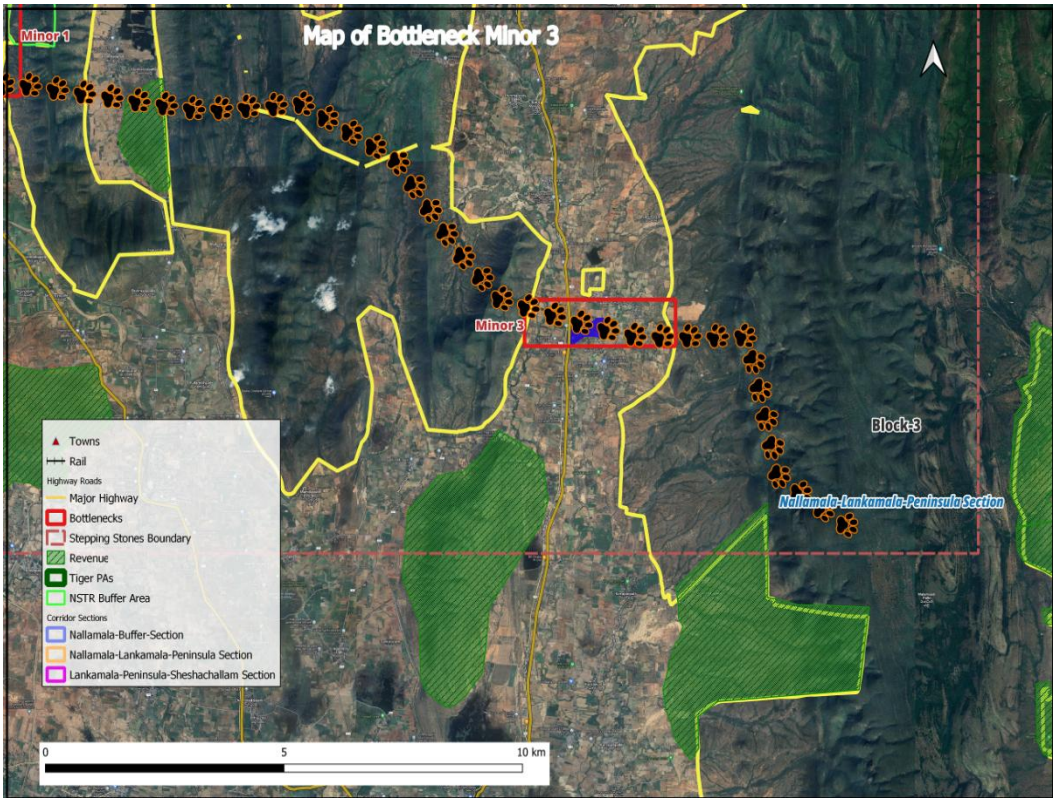




Bottleneck Name: Section 2_Bottleneck Minor 3:

There are revenue scrub forests and a lone block of Compartment 233 that can potentially connect the Venkapuram Beat and Kalasapadu Beat of Porumamilla Range. The "State Highway 54" connecting Porumamilla with Giddalur runs through this bottleneck. The agricultural area may not be very conducive to animal movement.

Map 15: Bottleneck Name: Section 2_Bottleneck Minor 3:

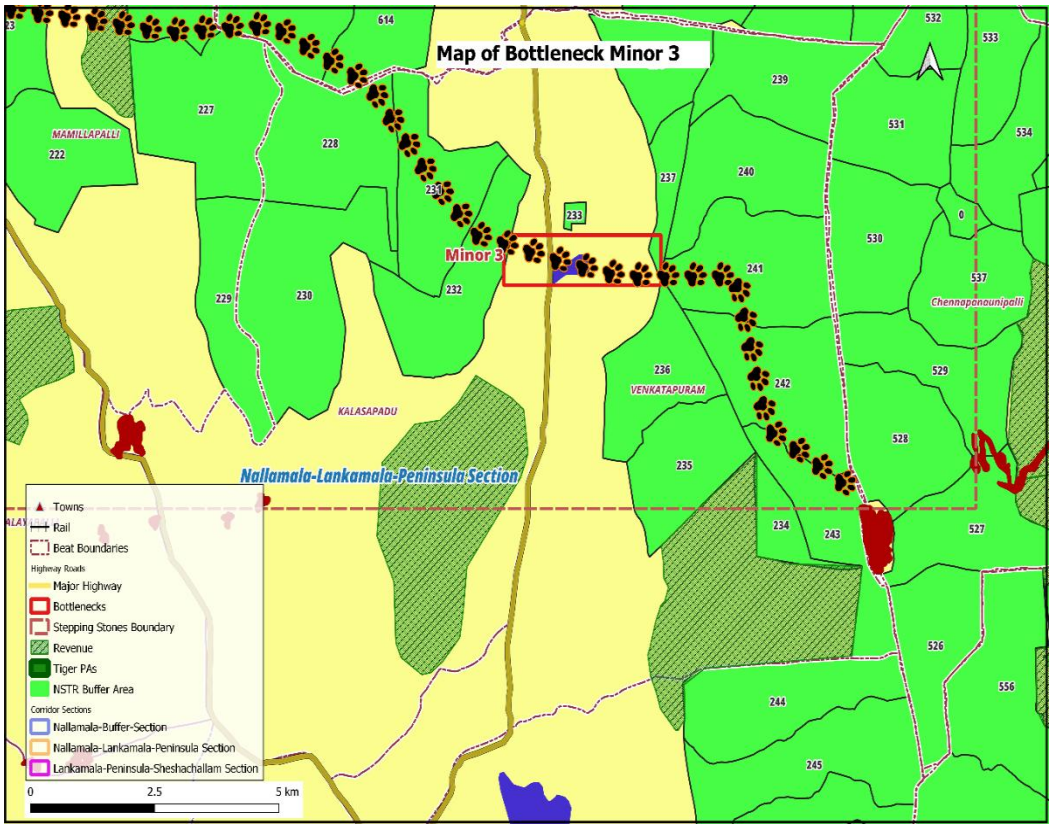


Strengths: The Kalasapadu Reserved Forests in the Porumamilla Range is a relatively quite a large block that can act as a refuge area for a lot of wildlife. The Bestavaripeta areas are also massive blocks with thousands of revenue forest areas abutting them.

Weakness: The State Highway 54 passing through this area may not be monitored, and mitigation measures have not been proposed, as it is marked for expansion. The two blocks are disjunct, with hard edges, making it difficult to maintain the functionality of the bottleneck.

Opportunities: The connectivity can be established through linear Corridors using an existing stream network. The road expansion can ensure some eco-bridges or underpasses are kept for connectivity.

Threats/Challenges: The monitoring or mitigation of ill effects of State Highway 54. Difficulty in monitoring and managing the hard edge and agricultural practices.



Management Inputs:

i. Land purchase and declaration of revenue forest as Reserved Forests would be very useful to strengthen this Corridor.

ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity and importance of this bit for connecting Nallamala with Veligonda hills.

iii. The current crop pattern may not be very wildlife friendly, there should be Agro-forestry and habitat restoration done with the help of local communities.

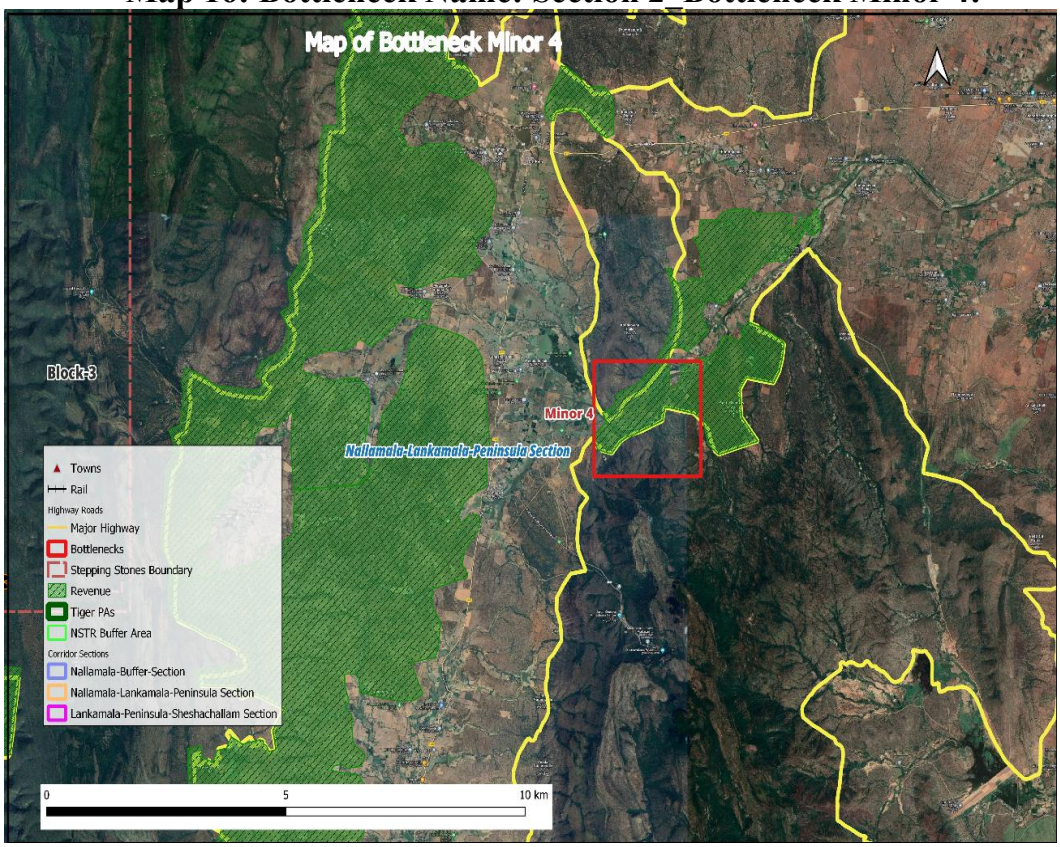
iv. There should be a priority on addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

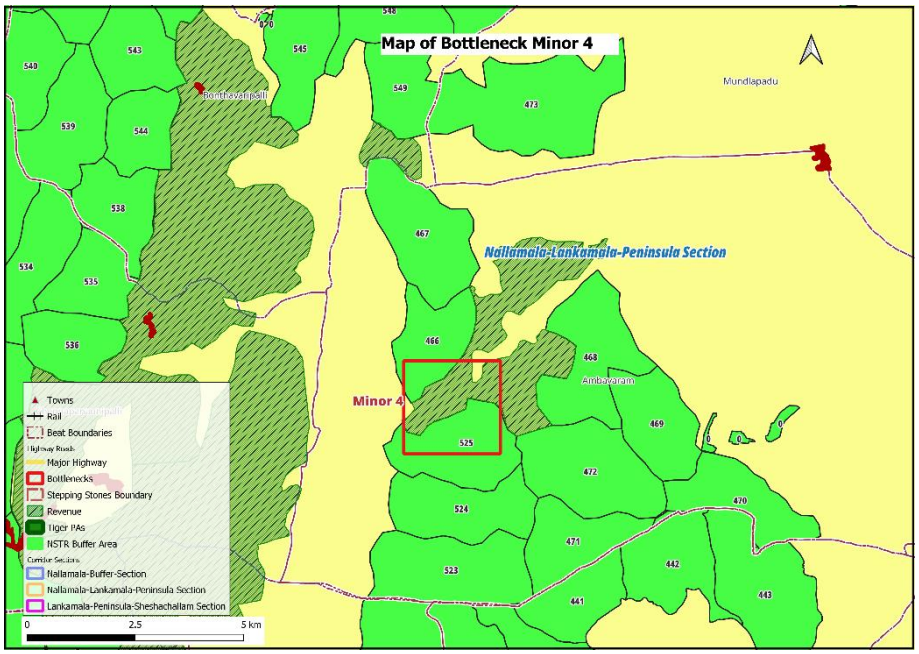
v. All the electric lines passing in this area should be insulated to reduce the chances of electrocution.

Bottleneck Name: Section 2_Bottleneck Minor 4:

This bottleneck requires acquiring land from the Revenue Department to be declared as a Reserved Forest. There is a substantial amount of land under the Revenue Department that can significantly strengthen the connectivity and permeability of the corridors.

Map 16: Bottleneck Name: Section 2_Bottleneck Minor 4:

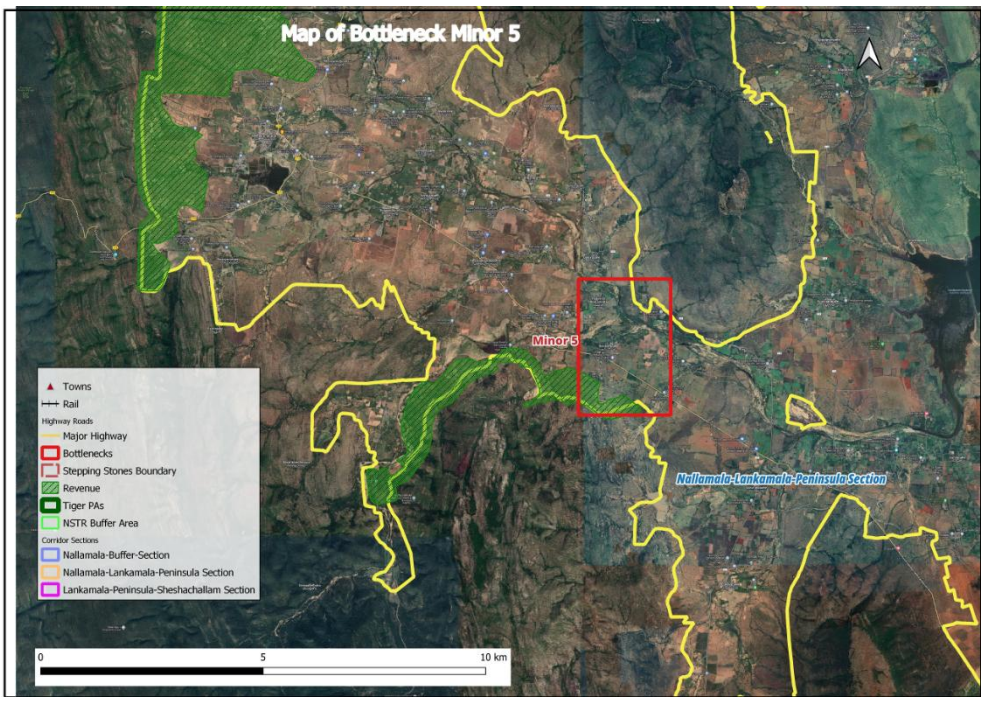




Bottleneck Name: Section 2_Bottleneck Minor 5:

Arlapadia Beat in the north and Sekunapalli Beat in the south, both lying in the Udaygiri Range, are disconnected for over 1.5 km. The gap has the Pillaperu River passing through it, and the village of Sekunapalli lies in the middle of the bottleneck. The Birvanikonda Block in the north is connected with the larger Venikonda Hills, and the Seetharapuram RF Block is nested within a solid ‘core Corridor’.

Map 17: Bottleneck Name: Section 2_Bottleneck Minor 5:

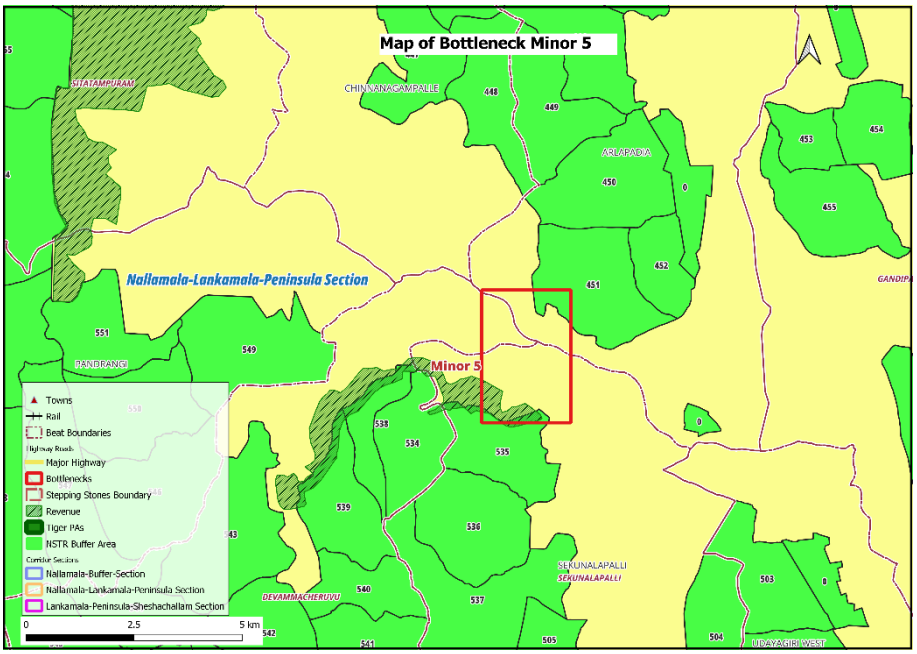


Strengths: The forest on either side of the bottleneck is connected to the larger patch. The scrub forest within the bottleneck, along with the riverbed of the Pillaperu River, acts as a natural habitat mosaic corridor.

Weakness: The fragmentation and forest of the nearby blocks lying in revenue areas may not be possible to manage for connectivity. The intensive agriculture mainly paddy makes the bottleneck not conducive for wildlife movement.

Opportunities: The connectivity can be established through forests and mosaic Corridors. Agro-forestry can yield success due to water availability.

Threats/Challenges: The hard edge of forest and degradation due to heavy grazing and repeated forest fires. Management and monitoring of any wildlife movement would also be very difficult in these areas.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. The current crop pattern may not be very wildlife friendly, there should be agro-forestry and habitat restoration done with the help of local communities.

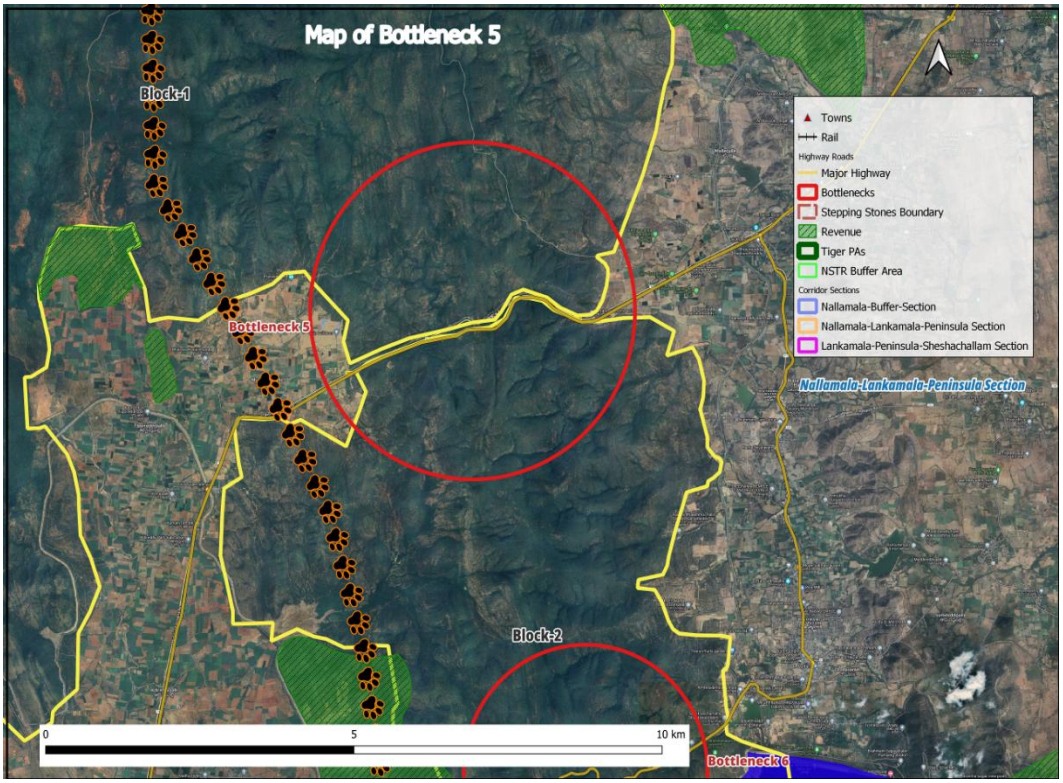
iii. There should be a priority of addressing forest fires and cattle grazing with the involvement of local communities in the bottleneck.

iv. All the electric lines passing in this area should be insulated to reduce the chances of electrocution. Education and awareness should be taken up in these areas.

Bottleneck Name: Section 2_Bottleneck 5:

The bottlenecks 5 and 6 will have similar management requirements due to the proximity of these roads and their functionality. Although the forest is contiguous except for the road, the expansion of the road can cause major problems for wildlife movement, including road kills. The forest is also accessible due to the right of way through it. The State Highway 54, connecting Mydukur and Porumamilla, runs for about 5 km in this corridor landscape. This road is also considered the southernmost extent of the Nallamala Hills, giving way to the Kancherlamoram Hills.

Map 18: Bottleneck Name: Section 2_Bottleneck 5:

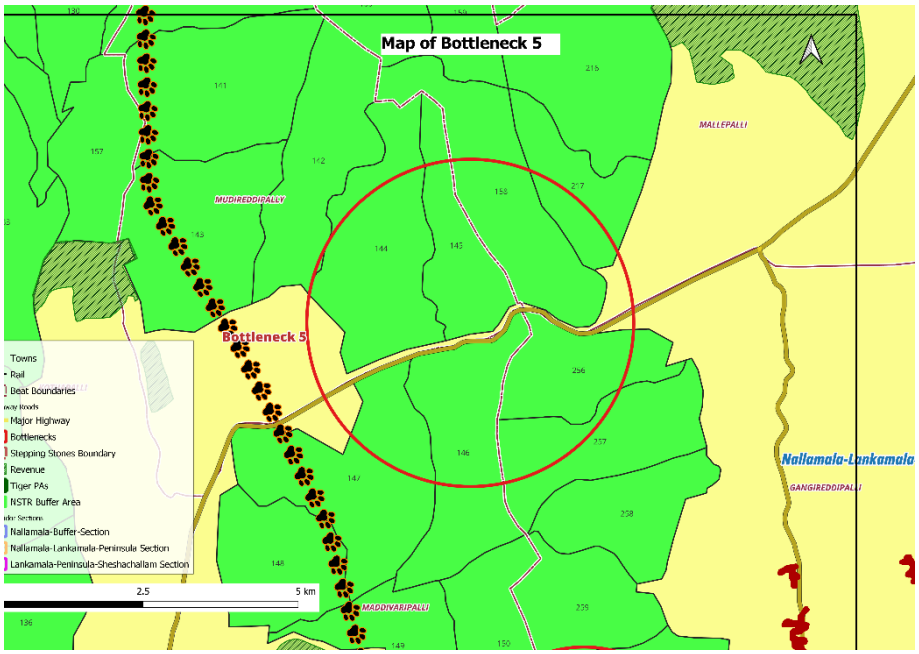


Strengths: Breeding population in Porumamilla and a solid block of forest on both sides of the road that bisects this bottleneck. Defined boundaries and Reserved forest cover make it easy for monitoring purposes.

Weakness: The area is prone to fires due to open access for people. There is also significant cattle presence because of easy accessibility. The proposed road expansion could further fragment the two areas.

Opportunities: The road expansion can include provisions for eco-bridges or underpasses to maintain connectivity. The habitat also provides an opportunity to undertake studies on road ecology and develop suitable mitigation measures.

Threats/Challenges: No matter how many underpasses or overpasses are made; animals would be crossing the road which is 5 km in this stretch. Managing fire and access to forest in the Reserved Forest Area would be difficult.



Management Inputs:

i. Mainly managing roads and other linear infrastructures abutting the road. Check posts on either side, highway patrol, speed breakers, speed regulation, and access time limitation (e.g. 6 am-6 pm only) needed.

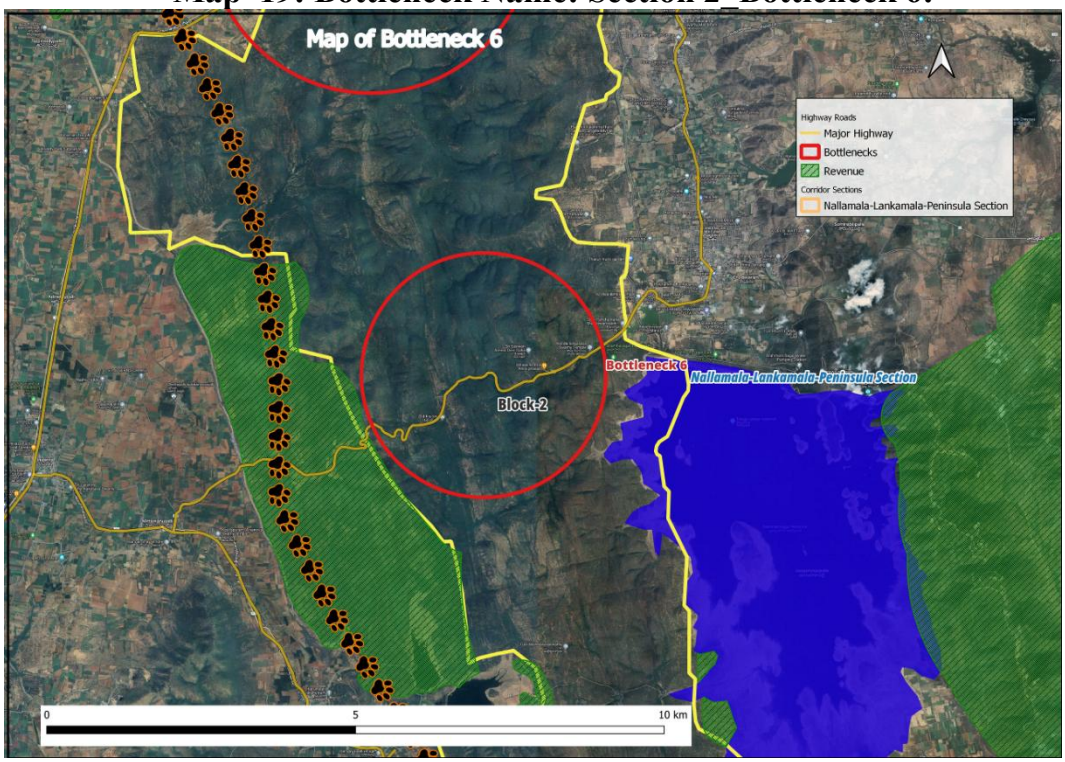
ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of the Ahobilam Proposed Sanctuary with Lankamalla Wildlife Sanctuary.

iii. There should be a priority on addressing forest fires with a scientific fire management plan along the roads.

Bottleneck Name: Section 2_ Bottleneck 6:

The forest is contiguous except for the road; however, the expansion of the road can cause major problems for wildlife movement, including road hits. The forest is also accessible due to the right of way through it. The State Highway 418, connecting Kadapa and Porumamilla, runs for about 5 km in this Corridor landscape through the Kancherlamoram Hills.

Map 19: Bottleneck Name: Section 2_Bottleneck 6:

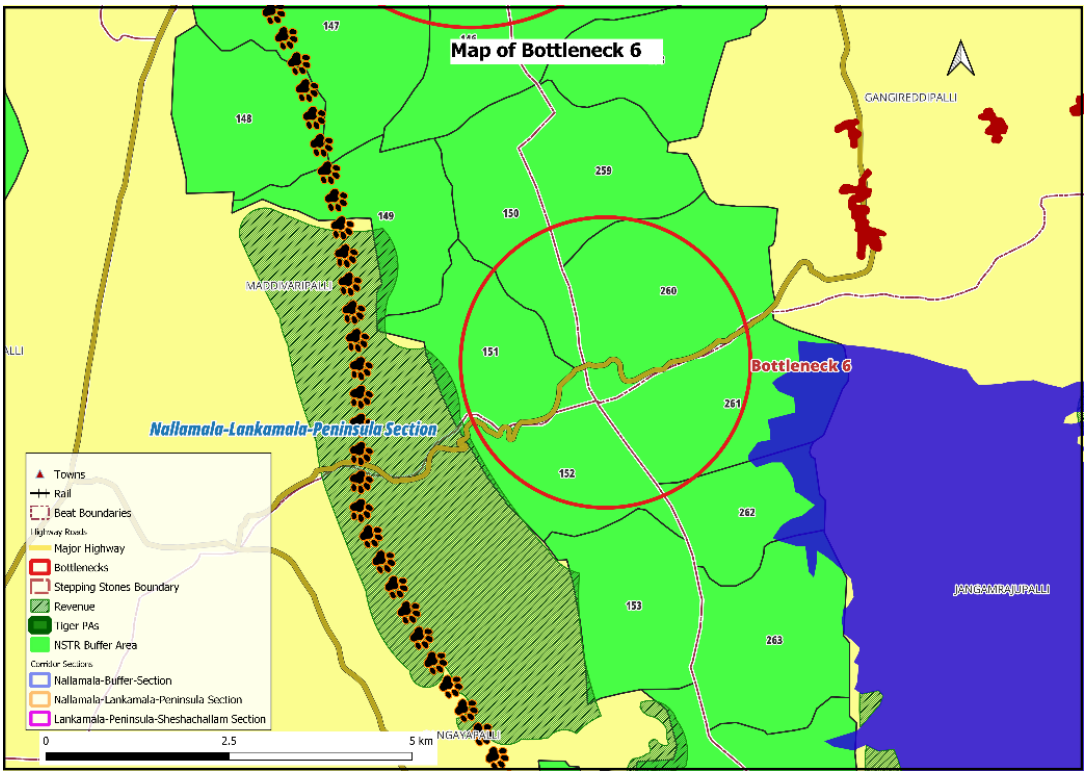


Strengths: Breeding population in Pourmamilla and a solid block of forest on both sides of the road that bisects this bottleneck. Defined boundaries and Reserved forest cover make it easy for monitoring purposes. The road has many turns making speed driving a little difficult.

Weakness: The area is prone to fires due to open-access areas for people. There is also cattle presence due to accessibility.

Opportunities: The management of the area can be strengthened through increased patrolling and by reducing traffic during nighttime. The habitat also provides an opportunity to undertake studies on road ecology and implement suitable mitigation measures.

Threats/Challenges: The existing culverts should be made in funnel shape to make them wildlife-friendly. Managing fire and access to forest in the Reserved Forest Area would be difficult.



Management Inputs:

i. Mainly managing roads and other linear infrastructures abutting the road. Check posts on either side, highway patrol, speed breakers, speed regulation, and access time limitation (e.g. 6 am - 6 pm only) needed.

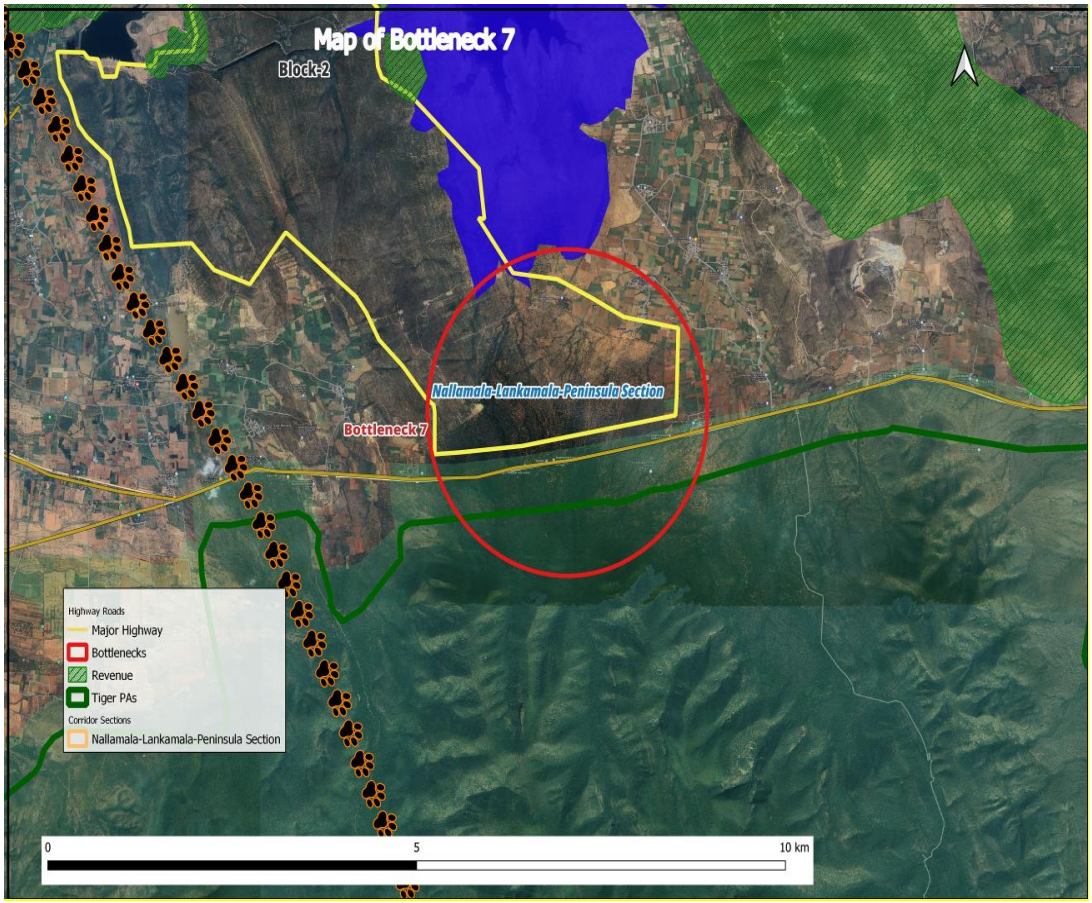
ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of the Ahobilam Proposed Sanctuary with Lankamalla Wildlife Sanctuary.

iii. There should be a priority to addressing forest fires with a scientific fire management plan along the roads.

Bottleneck Name: Section 2_Bottleneck 7:

The major issue in this bottleneck is the presence of NH-67, which connects Mydukur to Badvel and runs for about 1.5 km on the Northern edge of Lankamalla Wildlife Sanctuary. This road is marked for expansion. The existing road is straight with no turns or bends, and the vehicles move very fast on this road. The National Highway Authorities shall be requested to install Speed Breaks and Rumble Strips every 500 mtr with proper signages on the road passing through the forest in the Corridor area.

Map 20: Bottleneck Name: Section 2_Bottleneck 7:

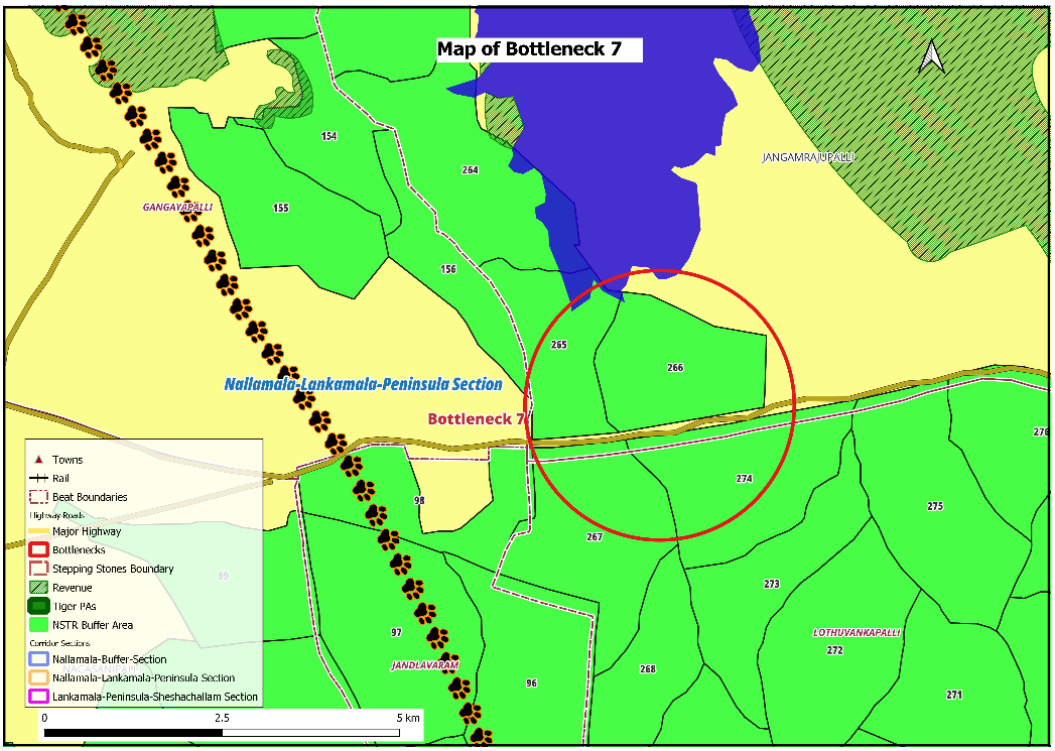


Strengths: There is a contiguous forest on both sides. There is a clear demarcation of boundaries, and the road can be managed to reduce adverse impacts.

Weakness: The area is prone to fires due to open-access areas for people. There is also cattle presence due to accessibility and villages all around the narrow patch.

Opportunities: The management of the area can be improved through enhanced patrol and reducing traffic during nighttime. The habitat also provides an opportunity to undertake studies on road ecology and implement appropriate mitigation measures.

Threats/Challenges: The existing culverts should be made in funnel shape to make them wildlife-friendly. Managing fire and access to forest in the Reserved Forest Area would be difficult.



Management Inputs:

i. Mainly managing roads and other linear infrastructures abutting the road. Check posts on either side, highway patrol, speed breakers, speed regulation, and access time limitation (e.g. 6 am-6 pm only) needed.

ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of the Ahobilam Proposed Sanctuary with Lankamalla Wildlife Sanctuary.

iii. There should be a priority of addressing forest fires with a scientific fire management plan along the roads.

5.6.2. Lankamalla to Seshachalam Corridor section:

The Corridor tract includes parts of 5 Territorial/Wildlife Management Divisions. The following are the Division details of the forest areas in the Corridor Plan given in Annexure-III.

The Corridor is mostly covered by Seshachalam hill ranges. There were reports of the presence of tigers earlier in the region and habitat suited for it. From Talakona to Veligonda, it is a continuous patch without any fragmentation and habitation. Sri

Venkateswara National Park and Sanctuary are part of this region. Moreover, the area covering the Seshachalam hills were declared as Seshachalam Biosphere Reserve (BR) by MoEF in 2011.

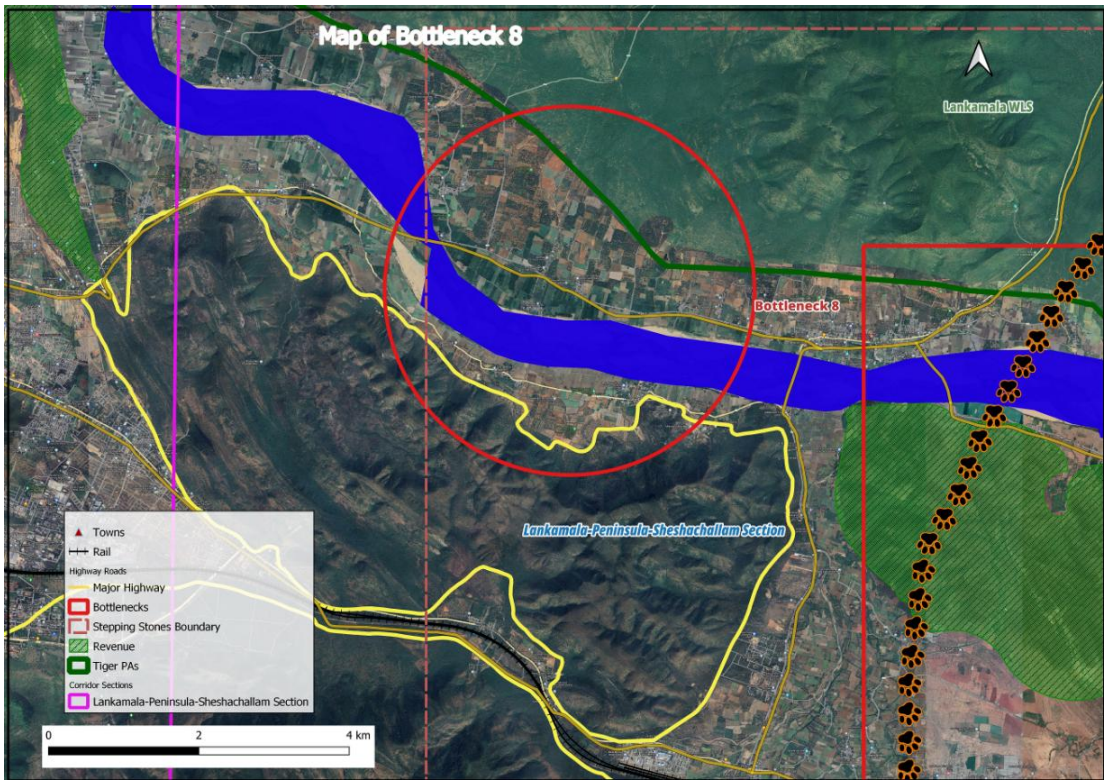
This Corridor stretch has a few barriers such as the Railway track from Renigunta to Guntakal along with a continuous road from Renigunta to Kadapa in Tirupati and Balapalli ranges of Tirupati Division, Sanipaya to Rajampeta road in Annamayya Division and Rangampeta to Kothapeta road in Chittoor Division. No human habitations except the Tirumala enclosure exist on the track. There are two Stepping stones and six bottlenecks identified in this section of the Corridor

Bottleneck Name: Section 3_Bottleneck 8:

This bottleneck has the Pennar River at the center, along with revenue agricultural areas that separate the Lankamalla Hills from the Palakonda Hills. The major road, NH-716, which connects Kadapa with Siddavatam and further extends to Badvel, passes through this bottleneck. The land use in this area consists of intensive rice cultivation, making the region less permeable for wildlife connectivity.

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Map 21: Bottleneck Name: Section 3_Bottleneck 8:

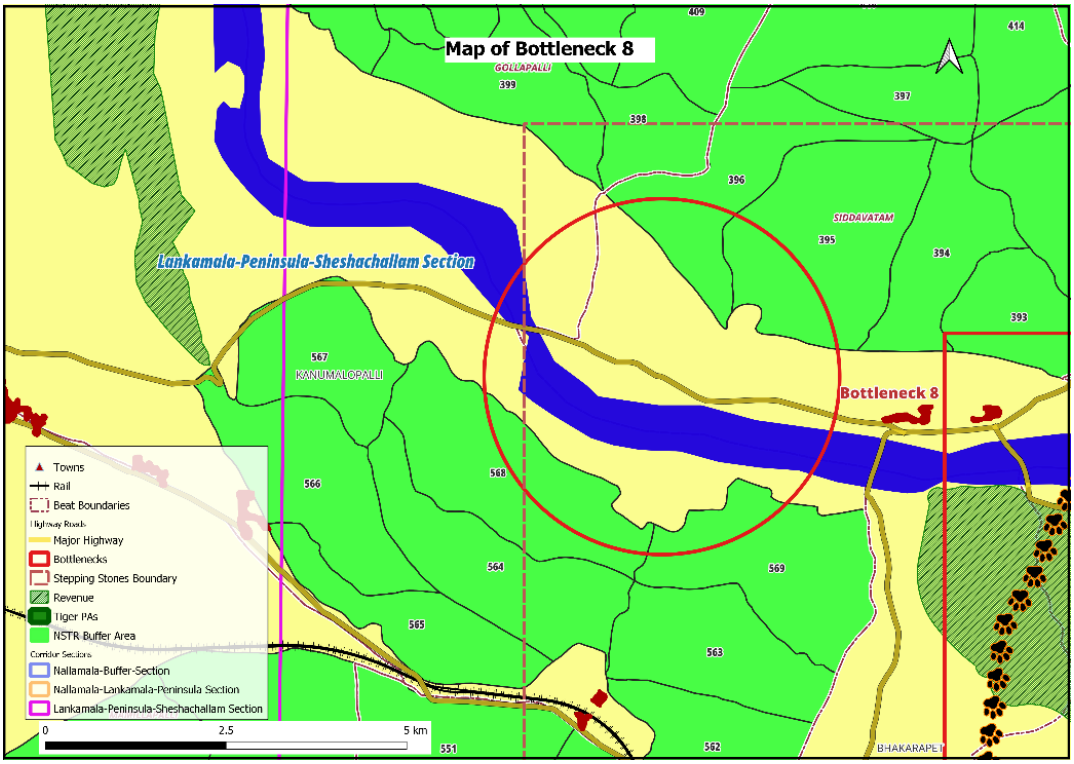


Strengths: The Lankamalla on the North is a solid block of forest and the Palakonda hills lead to SVNP.

Weakness: The presence of agricultural areas, roads, riverbanks, and villages makes Corridors less permeable.

Opportunities: The connectivity can be established through forests and mosaic corridors. The road expansion can include provisions for eco-bridges or underpasses to maintain connectivity.

Threats/Challenges: The huge forest edge makes it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of Lankamalla with Seshachalam Hills.

iii. The current crop pattern may not be very wildlife friendly, there should be Agro-forestry and habitat restoration done with the help of local communities.

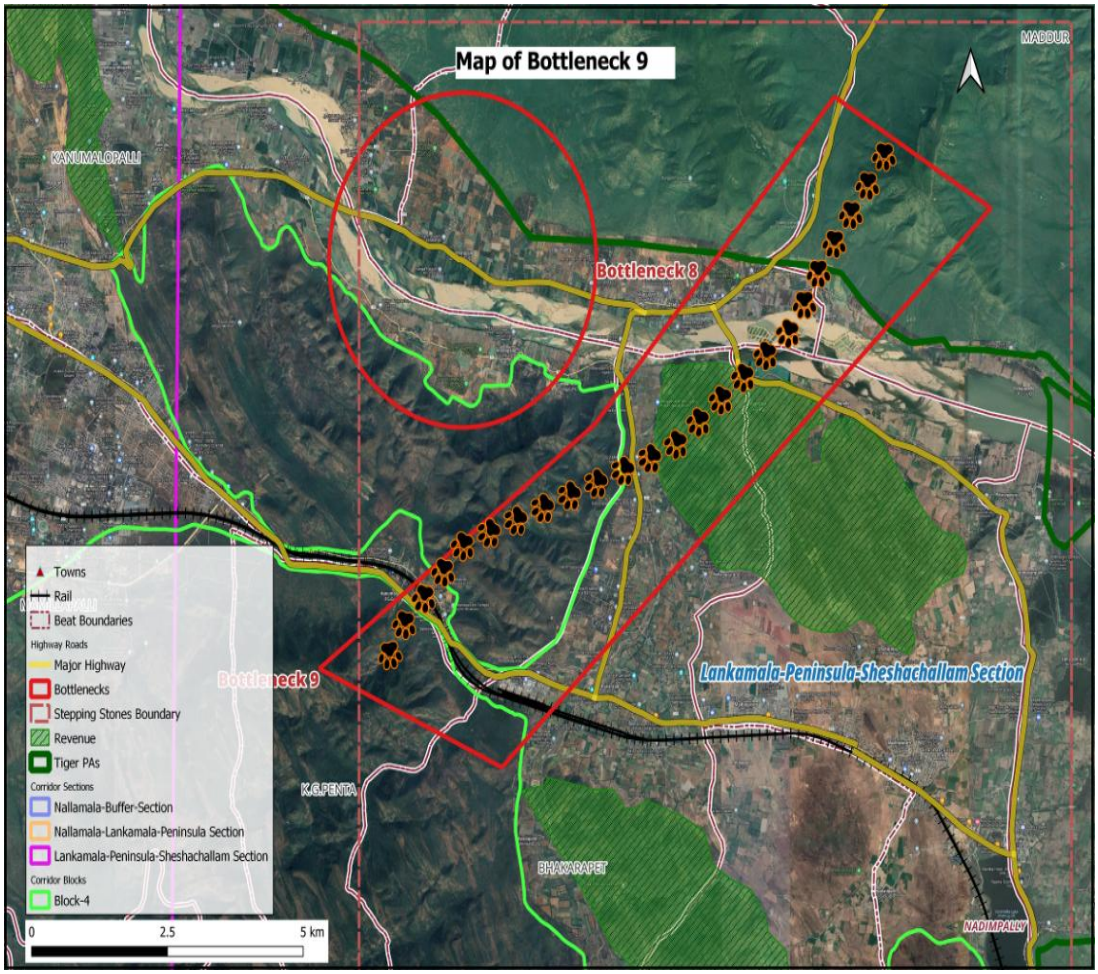
iv. Priority should be given to addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

v. All the electric lines passing in this area should be insulated to reduce the chances of electrocution. Education and awareness should be taken up in these areas.

Bottleneck Name: Section 3_Bottleneck 9:

Bottleneck 9 has Stepping stone connectivity through revenue forest. Since connection through the Pennar riverbed is crucial for Lankamalla or eventually Nallamala tigers' ability to disperse to Seshachalam Hills. In this area, the forest on both the sides come very close with a few almost a few hundred meters' gap. This is perhaps in the path much preferred than bottleneck 3 to navigate into Palakonda hills. There are roads like NH716 from the Kadapa-Tirupati Road passing through this bottleneck. The Guntakal-Tirupati railway line also passes through this bottleneck, but it is almost contiguous except for the habitat mosaic in Kanumapalle village area.

Map 22: Bottleneck Name: Section 3_Bottleneck 9:

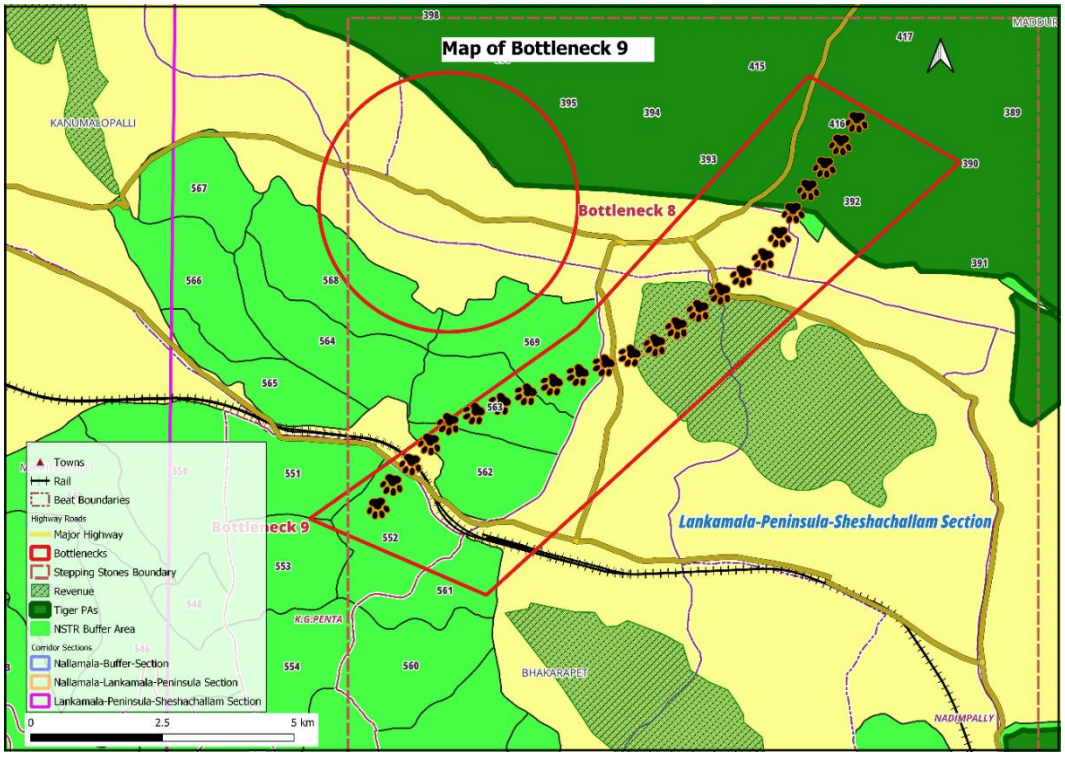


Strengths: The connectivity is almost intact and forms the shortest path Corridor from Lankamalla to Palakonda hills that connect to SVNP.

Weakness: The connectivity is possible only through agricultural areas, riverbeds or revenue forests in the bottleneck is unmanaged for forestry or wildlife activities.

Opportunities: The connectivity can be established through forests and mosaic Corridors. The road or railway line expansion can ensure some eco-bridges or underpasses are kept for connectivity.

Threats/Challenges: The road project and the activity in the Pennar River might leave with very little possibility of connectivity. The huge forest edge makes it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of Corridor

iii. The current crop pattern may not be very wildlife friendly, there should be Agro-forestry and habitat restoration done with the help of local communities.

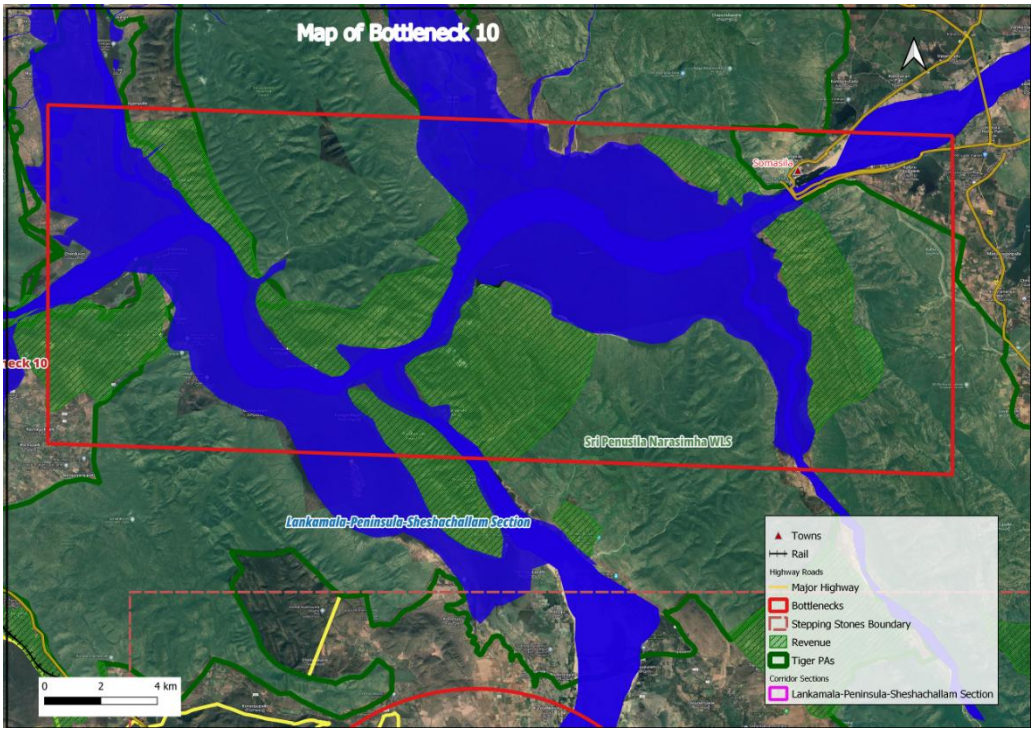
iv. Priority should be given to addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

v. All the electric lines passing in this area should be insulated to reduce the chances of electrocution. Education and awareness should be taken up in these areas.

Bottleneck Name: Section 3_Bottleneck 10:

Much of the Sri Penisula Narasimha Wildlife Sanctuary (SPNWLS) has been identified as a bottleneck due to its fragile ecosystem that gets inundated by the backwaters of Somsila Reservoir in flood season making connectivity not possible. It has direct connectivity with Lankamalla Wildlife Sanctuary. The backwaters recede post-monsoon opening large areas for grazing and also connecting habitats which are very vital for connectivity. There are over 12,000 acres of revenue forest in this landscape which can add tremendous value to the Corridor landscape.

Map 23: Bottleneck Name: Section 3_Bottleneck 10:

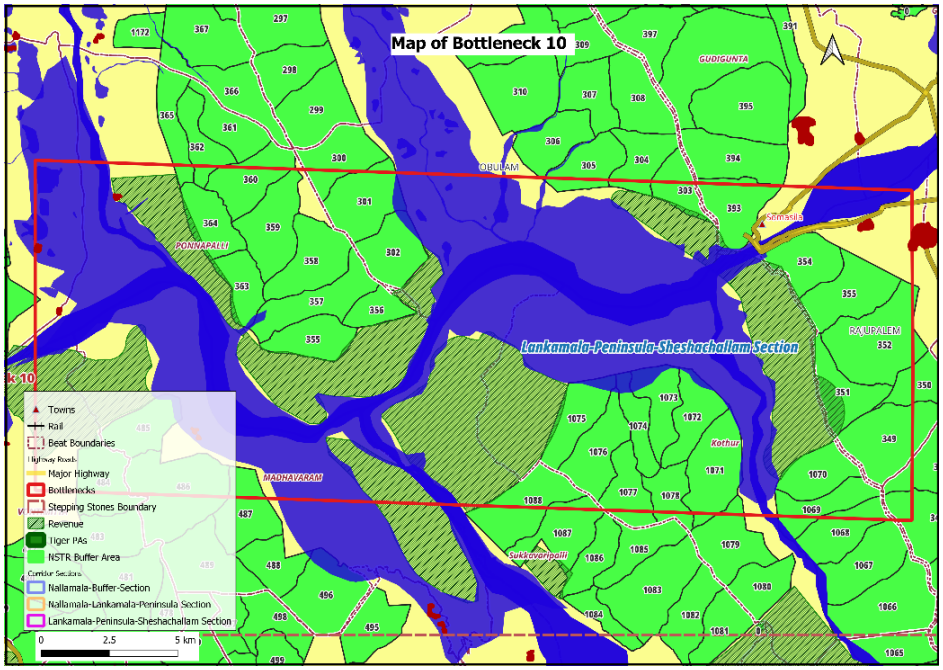


Strengths: It lies in a wildlife sanctuary, and there is a huge amount of revenue forest that can act important part of the connectivity.

Weakness: The submergence completely disconnects acting as a seasonal Corridor. There is a scope for a tremendous amount of fishing in the backwaters of Somasila.

Opportunities: Tremendous eco-tourism potential to improve the value of this bottleneck. This is the largest bottleneck and much of the area can have a wildlife-centric management due to the Sanctuary status of the land. There is an opportunity to explore floating bridges or eco-bridges for wildlife.

Threats/Challenges: The heavy use of reservoirs for fishing and deep waters makes Corridor connectivity difficult.



Management Inputs:

i. Declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. Underpasses and Overpasses should be proposed keeping in mind the connectivity of Core areas with forested habitat in the Markapur range.

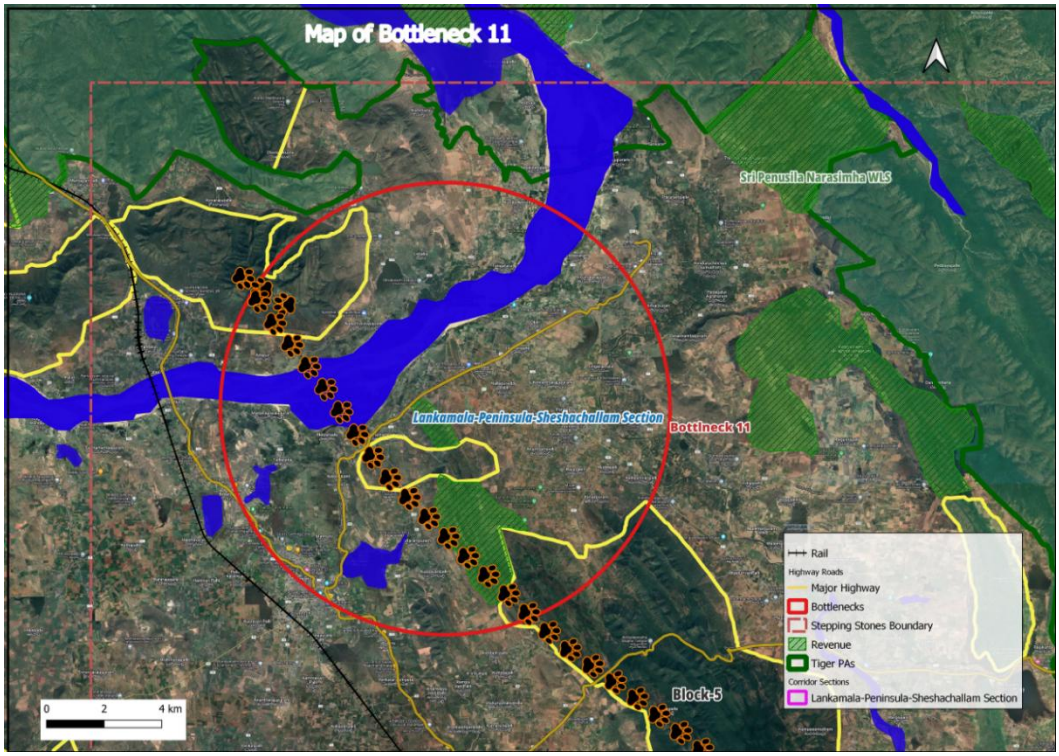
iii. In case of submergence of habitat, a study should be taken up to reduce loss of connectivity and opportunities for planning connectivity using eco-bridges and floating bridges.

iv. A special plan for managing PNWLS should be made with components of habitat connectivity, protection, and ecotourism.

Bottleneck Name: Section 3_ Bottleneck 11:

The bottleneck 11 has a Stepping stone Corridor connecting Palakonda Hills with Veligonda Hills through Cheyyeru River. The forested habitat of Nandaluru beat of Rajampet Range meets with BD Bhavi beat of Chitvel Range through a vital link across Cheyyeru river and some ‘State-owned Revenue Forests’. The Rajampet - Pennagulur Road or ‘State Highway- SH-32’ passes through this Corridor.

Map 24: Bottleneck Name: Section 3_ Bottleneck 11

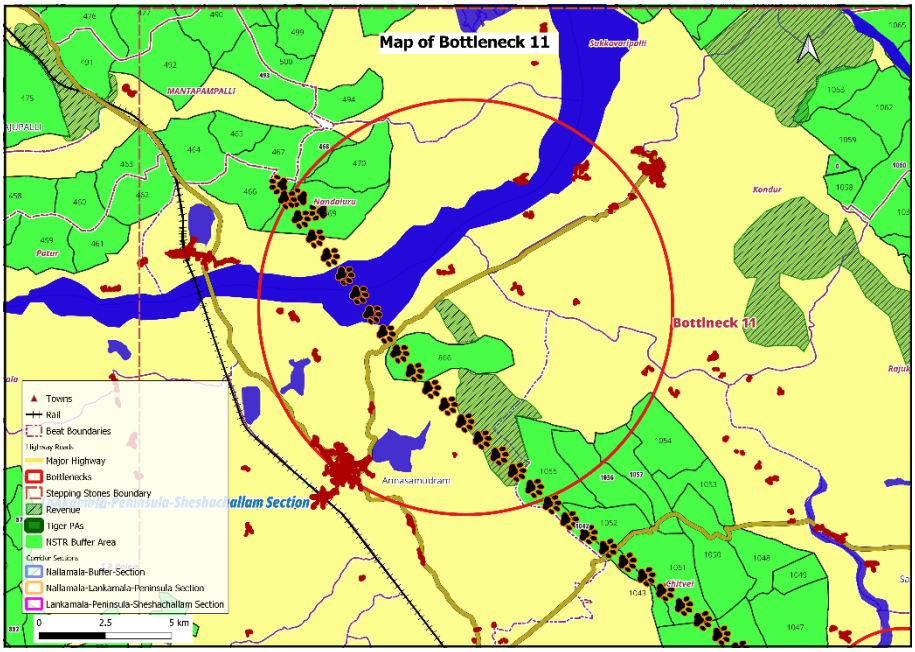


Strengths: The riverbed and the revenue forest areas add to connectivity for this vital link of the Corridor.

Weakness: SH32 passes through this bottleneck, it is completely outside the forest area making management not feasible.

Opportunities: The connectivity can be established through forests and mosaic Corridor. The road expansion can ensure some eco-bridges or underpasses are kept for connectivity.

Threats/Challenges: The small blocks and huge forest edge make it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. The current crop pattern may not be very wildlife friendly; there should be Agro-forestry and habitat restoration taken up with the help of local communities.

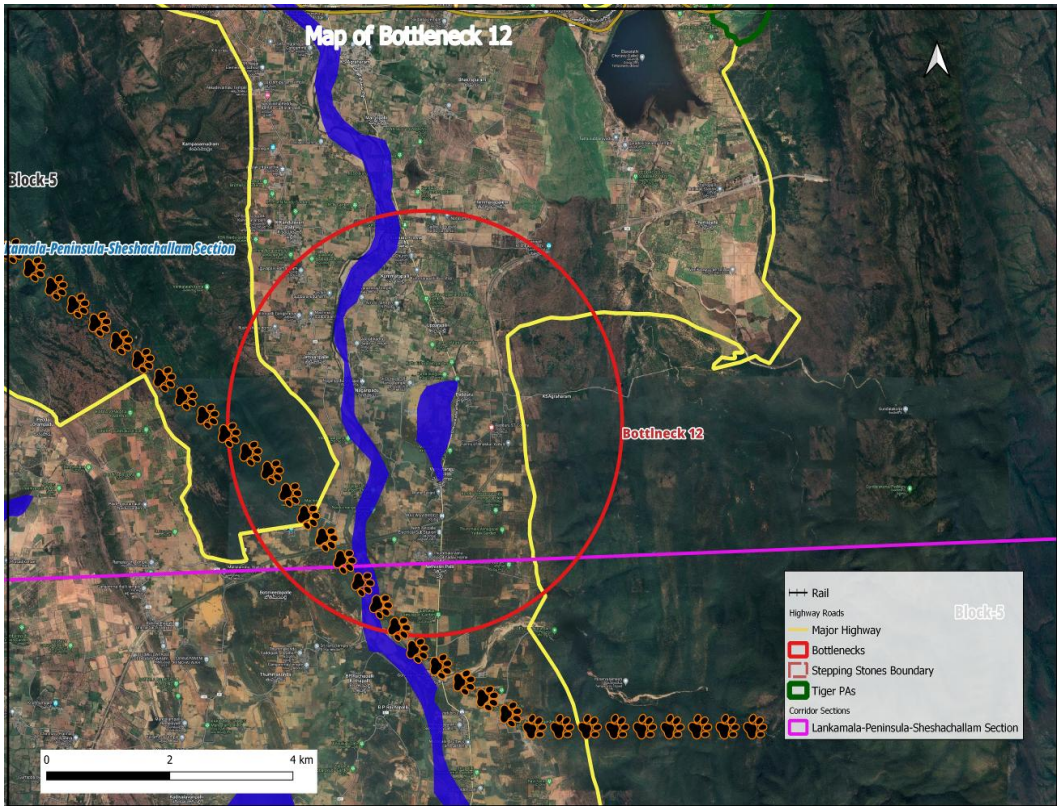
iii. Priority should be given to addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

iv. All the electric lines passing in this area should be insulated to reduce the chances of electrocution. Education and awareness should be taken up in these areas.

Bottleneck Name: Section3_ Bottleneck 12:

The bottleneck 12 connects Block-5 in Annamaya District with Chitvel and Venkatarajulapalle beats, of Chitvel range. The connectivity breaks with 2 km of revenue area from Chitvel - Koduru Road on NH-716 which is marked for expansion. The Gottimanukona River also passes through this bottleneck.

Map 25: Bottleneck Name: Section3_ Bottleneck 12

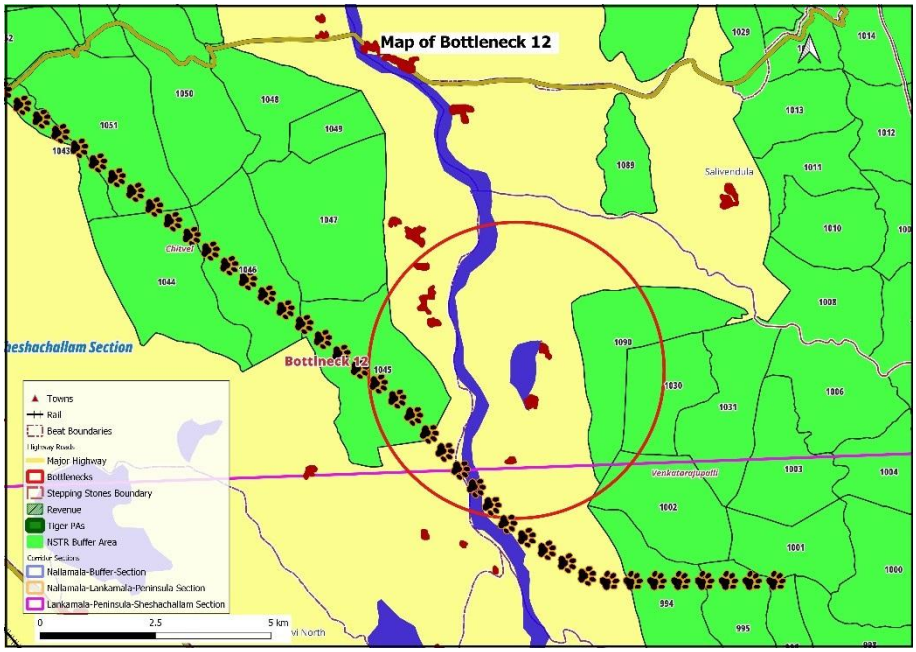


Strengths: The riverbed and the revenue forest areas add to connectivity for this vital link of Corridor that connects Palakonda Hills and Venigonda Hills in Anamaya District.

Weakness: NH716 passes through this bottleneck, and it is completely outside the forest area making management not feasible.

Opportunities: The connectivity can be established through forests and mosaic Corridors. The road expansion can ensure some eco-bridges or underpasses are kept for connectivity.

Threats/Challenges: The small blocks and huge forest edge make it difficult to manage any poaching or infiltration attempts. Crop protection using electric lines can be lethal and should be contained.



Management Inputs:

i. Land purchase and declaration of revenue forests as Reserved Forests would be very useful to strengthen this Corridor

ii. The current crop pattern may not be very wildlife friendly; there should be agro-forestry and habitat restoration done with the help of local communities.

iii. Priority should be given to addressing forest fires and cattle grazing in the bottleneck with the involvement of local communities.

iv. All the electric lines passing in this area should be insulated to reduce the chances of electrocution. Education and awareness should be taken up in these areas.

Barriers in the Nagarjuna Srisailam Tiger Reserve – Sri Venkateswara National Park Corridor Landscape (NSCL):

In NSCL Corridor, there exist various pathways enabling animal movement between different major sources from Lankamalla to Palakonda and another from Lankamalla to Velikonda via Peninsula WLS. However, the continuity of forest cover and availability of conducive habitat disrupted at certain points. These locations not only impede wildlife movement but also act as barriers to the main objective of the Corridor, which is to maintain genetic diversity. These areas are identified as obstacles and bottlenecks within the Corridor, with ten such impediments depicted on the map. Intense biotic pressures on these obstacles have led to significant reductions in forest cover in these areas over the past few decades.

The detailed description of these 10 Barriers is as follows:

Barrier No. 1:

Railway track (Broad gauge which passes from Guntakal to Guntur) of an approximate length of 28 km. from Gajulapalli to Diguvametta passes through Chelama Range of Nandyal Division, Gundlakamma range & Giddalur Range of Giddalur Division.

The railway track passes through the compartments 506, 507, 514, 515, 517, 523, 524, 525, 526, 527, 528, 529 of Chelama Range and 676, 680, 681 of Giddalur Range and 693 of Gundlakamma Range.

Barrier No. 2:

The National Highway (NH-544D) of length 28 km from Gajulapalli to Diguvametta passes through the Chelama Range of the Project Tiger, Nandyal and Gundlakamma Range of Project Tiger, Giddalur. The road has considerably high vehicular traffic throughout the day.

Barrier No. 3:

A stretch of State Highway (SH-315) from Allagadda to Ahobilam temple of length 10 Km passes through Compartments No. 354, 355, 356, 357, 358, and 362 of

Rudravaram Range in Project Tiger, Nandyal. The road has significantly high vehicular traffic due to inflow-outflow of pilgrims to this ancient Temple.

Barrier No. 4:

A stretch of Highway (NH 167B) of length 4 km from Onipenta to Mallepalle passes through compartments 144,145 of Onipenta Range & 158 of Porumamilla Range in Kadapa division. The road has considerably high vehicular traffic throughout the day.

Barrier No. 5:

A stretch of State Highway (SH 418) of length 4.5 km which passes from Nandyalampeta to Somireddipalle through compartments 151 of Onipenta Range & 260 of Badvel Range in Kadapa division.

Barrier No. 6:

A stretch of National Highway (NH 67) from Mydukur to Badvel passes through compartment no 265 of Badvel Range in Kadapa Division for a length of 4 km. The road has considerably high vehicular traffic throughout the day. This Highway is adjoining compartment no 267 of Sri Lankamalleswara Wildlife Sanctuary in Badvel Range. Hence it is a crucial location.

Barrier No. 7:

Fragmentation between the forest tracts of Siddavatam Beat and Kanumulopalle and Nadimpalle Beats of Kadapa Division is caused by the flow of the Pennar River, human settlements, and a BT road that passes from Kadapa to Siddavatam–Atluru and ends at Badvel.

The agricultural lands of Chalamareddipalli, covering an extent of about 150 to 200 acres, exist within the proposed corridor and need to be addressed on a priority basis by providing incentives or compensation. The affected farmers should be encouraged to raise lure crops for wildlife, and the rising costs and other related expenses may be compensated.

There is immense biotic pressure on the forests of this weak link, which earlier included forests of the Sri Lankamalleswara Wildlife Sanctuary in the Siddavatam Beat.

A BT road of about 13 km, from Siddavatam to the Nithyapooja Kona Temple, passes through compartments 396, 410, and 411 of the Sri Lankamalleswara Wildlife Sanctuary in the Siddavatam Range. There is a huge inflow of pilgrims to this temple during festive seasons, adding additional pressure on the corridor

Barrier No. 8:

A stretch of National Highway (NH-716) of length 3.5 Km. from Kanumalopalli to Bhakrapet passes through compartment no 562 of Kadapa Range in Kadapa Division. The road has very high vehicular traffic throughout the day

Railway broad gauge track from Kadapa to Nandalur also passes in the same location for a length of 3.25 Km.

Barrier No 9:

A stretch of State Highway (SH 59) of length. 6 km from Rajampeta to Rayachoti passes through compartments 884, 889, and 970 of the Rajampeta Range in the Annamayya division. The road has considerably high vehicular traffic throughout the day.

Barrier No 10:

Railway Broad gauge track from Renigunta to Kadapa along with a parallelly running National Highway (NH-716) between Renigunta and Kadapa of approximately 5 km passes through the Compartments 1104 and 1105 of Sri Venkateswara National Park of Balapalli Range of Tirupati Division.

The following measures shall be taken to strengthen these barriers:

GENERAL MEASURES:

Human habitations are present adjoining these impediment areas. There is a constant demand for timber and fuelwood in these regions to meet the needs of the population. To reduce the pressure on these weak links, LPG connections can be provided.

Villagers in these obstacle areas can be educated, through counselling by NGOs, to reduce the number of their unproductive cattle.

The parts lying adjacent to forest areas may be made available for grazing by wildlife if a farmer is willing to provide land for this purpose.

Stall Feeding:

To provide sufficient fodder for the cattle and to curb the grazing pressure on the forest fringe to these impediment areas, provisions for stall feeding should be facilitated.

Biogas plant:

To reduce the biotic pressure on the forests of the corridor, villagers need to be motivated to use biogas. This task should focus on popularizing the use of non-conventional energy resources. Biogas plants will help generate uninterrupted electricity.

Generators running on biogas will also assist in operating water pumps, thereby ensuring the supply of water to all houses in the village.

The support of NGOs and public representatives is extremely important in this initiative. Providing subsidies for the establishment of small biogas plants may also be considered.

Solar energy:

Solar home lights and solar cookers should be offered at subsidized rates to harness solar energy. These cookers help conserve firewood and lower carbon emissions.

SPECIAL MEASURES: -

BARRIER NOs 1, 8 & 10 (RAIL TRACKS)

Speed Regulation: - The speed of trains travelling through the designated forest section must be strictly controlled and should not exceed 40 km per hour. Additionally, at locations where the railway line has sharp curves, the speed limit must be restricted to 20 km per hour. Any adjustments to these speed limits are subject to approval by the NBWL.

Signal Posts: Signal posts are to be established at key junctions. These signals may provide information regarding the safe operating speed for trains or may instruct drivers to stop when necessary.

BARRIER NOs 2, 3, 4, 5, 6, 7, 8 & 10 (ROADS)

BT roads and earthen roads are available for access to temples located within forest areas, as noted in the impediments/barriers. The following safeguards have been implemented:

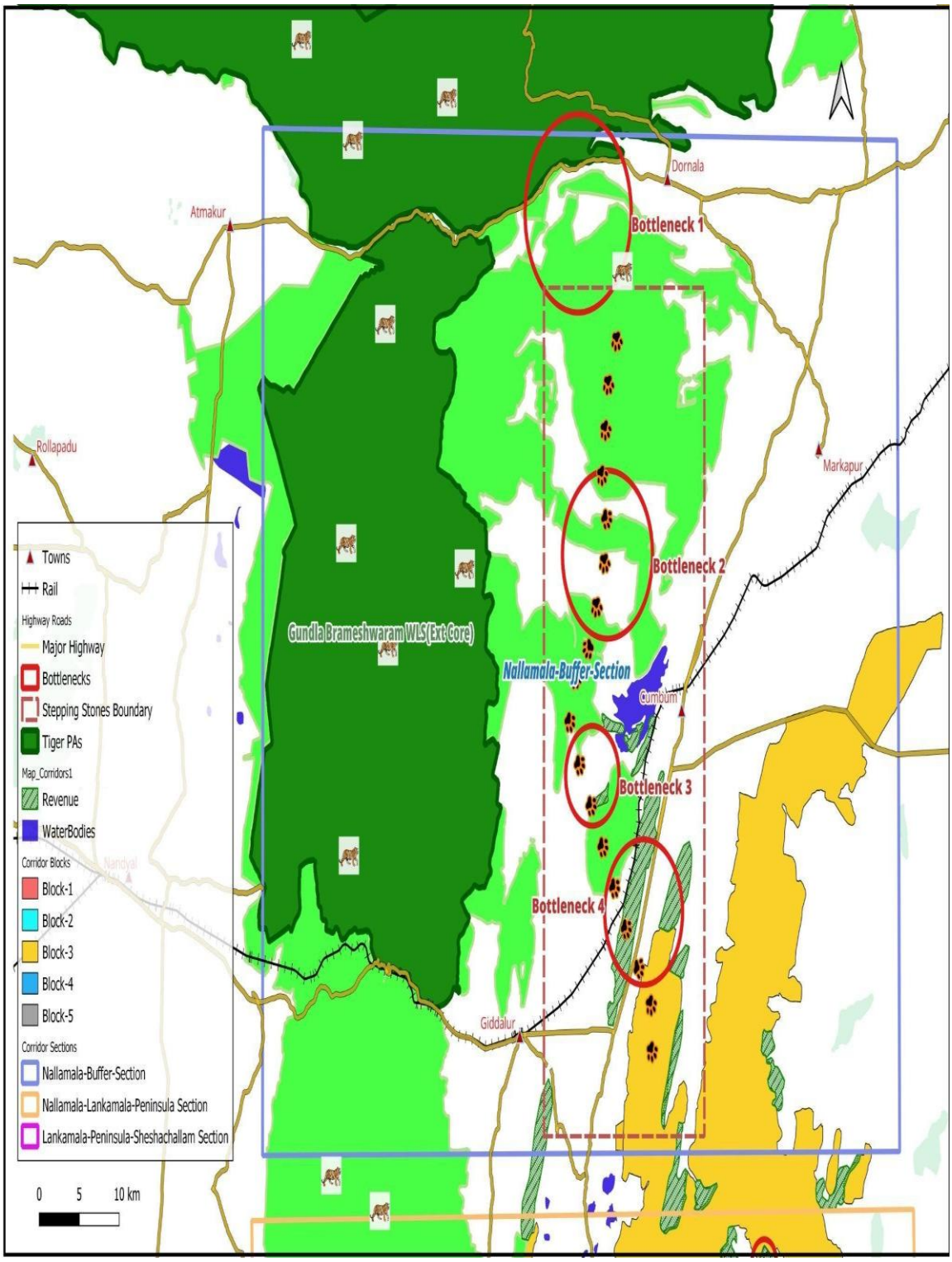
Speed Bumps/Breaks: -To regulate the speed of the vehicles on the roads passing through tract of forest in the segment of Corridor "Speed bumps" are to be formed at the prone areas of wildlife abundant areas. These speed bumps help to force the vehicle to reduce the speed and thus avoid Road kills.

Speed Regulation: -The speed of the vehicles is to be at 20 kmph on these roads to avoid animal accidents**.**

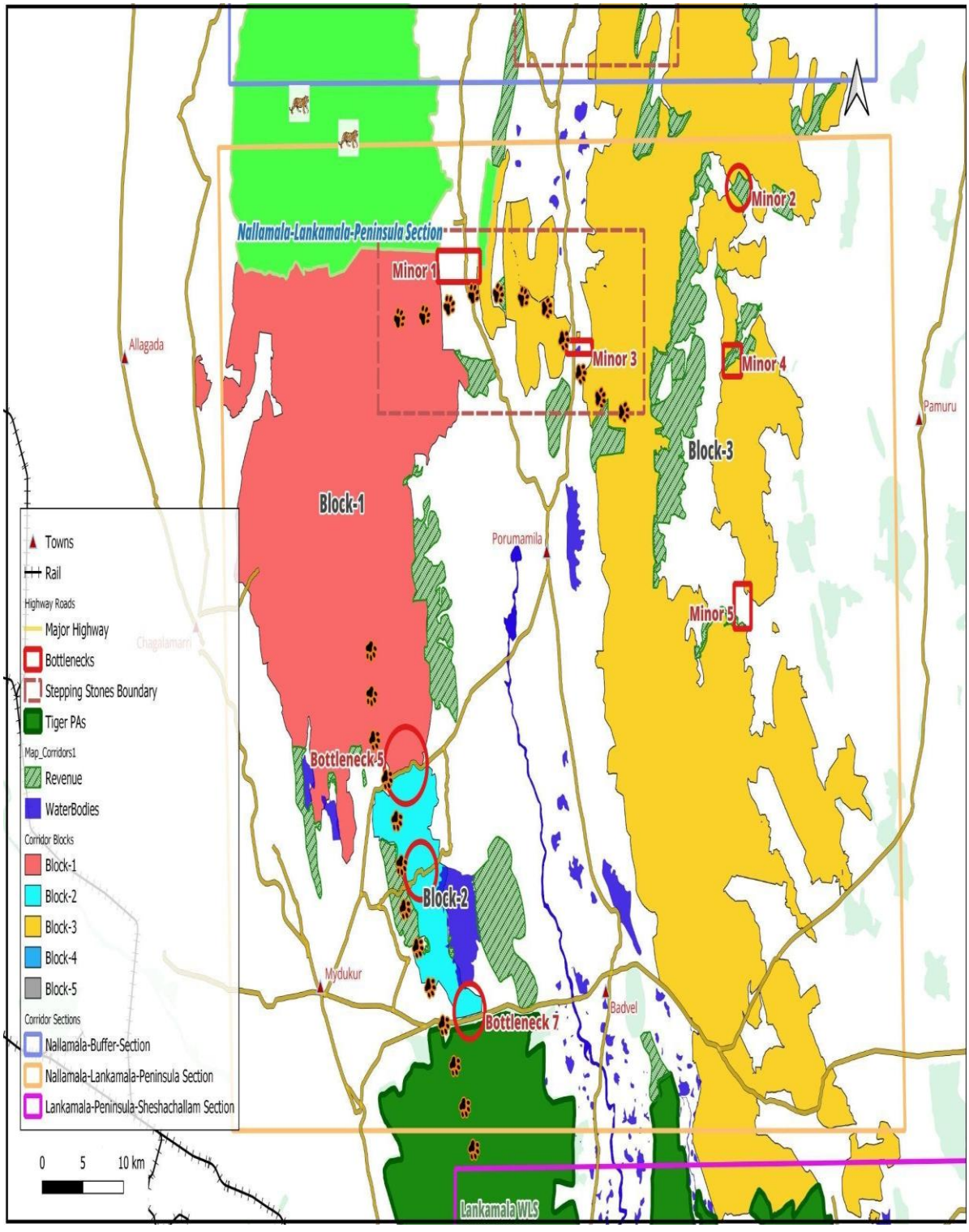
Time Regulation: - BT roads fragmenting in the Corridor are to be closed during nighttime between 06.00 PM to 06.00 AM for vehicular movement.

Creation of Underpass: - At least 3 to 4 underpasses shall be formed in every road barrier.

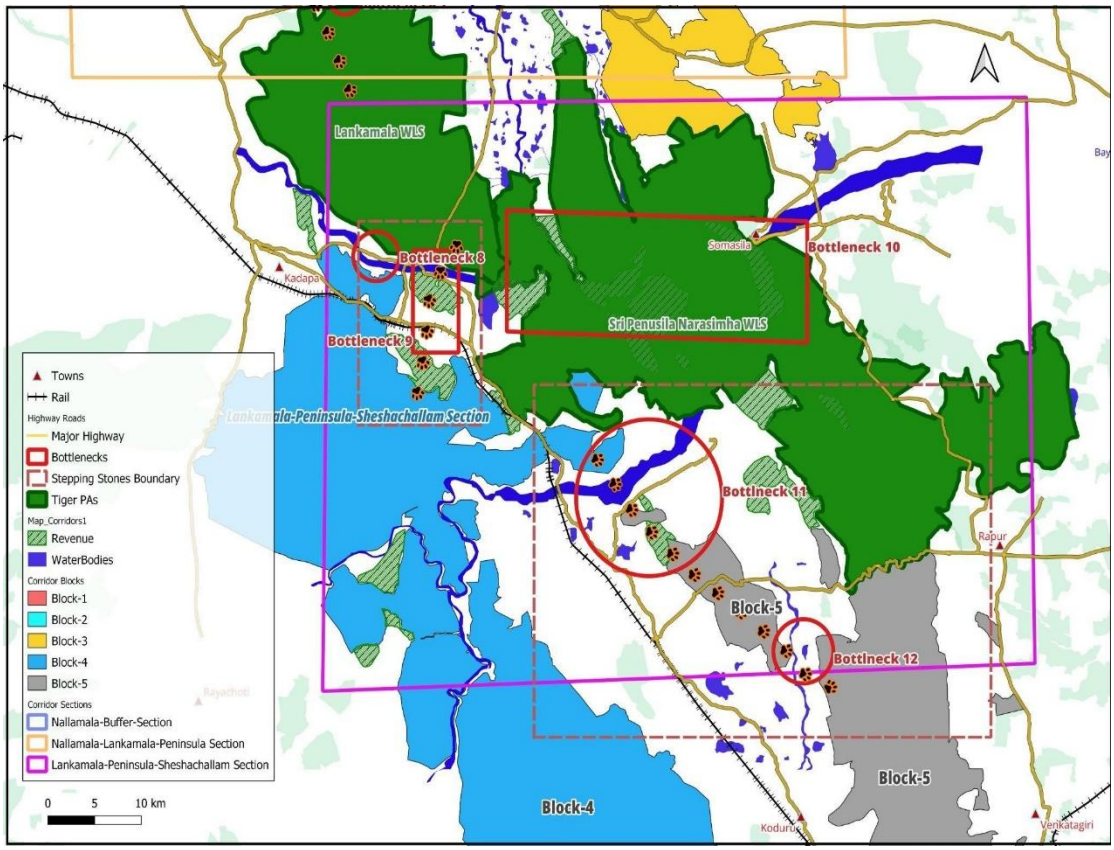
Map 26: Map showing boundary of Corridors between NSTR Buffer (Section 1)



Map 27: Map showing boundary of Corridors between NSTR Buffer (Section 2)



Map 28: Map showing boundary of Corridors between NSTR Buffer (Section 3)



5.7 Management of Villages Having Impact On The Corridor:

INTRODUCTION:

The adjacent villages are dependent on forests of the Corridor. In this way, the forests of the Corridor bear the biotic pressure of villages. The status of forest-dependent villages in the Corridor tract is as follows:

Table 10 - Number of villages having impact on the Corridor

Name Of the division	Number of villages
Tirupati	0
Annamayya	3
Nandyal	2
Kadapa	8
TOTAL	**13**

In Tirupati Division, nearly five villages are dependent on bamboo for their livelihood, mainly comprising Yanadi tribal people and a few other backward class communities. In Annamayya Division, nearly ten villages are located along the periphery of the corridor. All these villages depend on forests for their livelihood. To reduce the pressure on forests, alternative income-generating activities need to be provided. The majority of people in this area are dependent on agriculture.

In Nandyal Division, nearly 31 villages are dependent on bamboo for their livelihood, mainly inhabited by Chenchus, Yerukalas, and other economically weaker communities.

Specifically, Pacherla village of Pacherla Beat in Chelama Range, which falls outside the GBM Wildlife Sanctuary, needs special emphasis in this tract of the corridor. Tigers are moving very close to this village, giving it significant importance in terms of habitat protection. Therefore, it is necessary to relocate the Chenchu tribes and other non-tribal residents of Pacherla village by adopting a voluntary relocation package. This relocation will also help provide sustainable livelihood opportunities for the affected people.

In Kadapa Division, nearly 31 villages are located along the periphery of the corridor. All these villages depend on forests for their livelihood. In the past, the Telugu Ganga Project (TGP) canal was aligned through the present Lankamalla WLS. In view of the re-sighting of Jerdon's Courser in the sanctuary, the lands abutting the sanctuary, along with the TGP canal command area, were taken over by the Forest Department for the development of habitat for Jerdon's Courser. As a result, the affected farmers living in the vicinity are now dependent on forests for their livelihood.

The majority of people in these areas are dependent on agriculture.

In the management plan, priority will be given to the villages located in impediment areas, followed by the villages within the corridor, while the least priority will be accorded to the villages on the outer periphery.

GENERAL MEASURES:

The following general measures have to be adopted in the villages of the corridor to minimize their dependence on forests:

Engaging local people in forestry-related works, such as protection watchers in base camps, striking forces, anti-poaching squads, check posts, plantations, and other activities. Alternative livelihood sources will be provided with the help of the Revenue Department, DWMA, and other related departments.

A socio-economic survey of the villages in the region has revealed that the majority of the population depends on the corridor for nearly 70% of their firewood needs. As they do not have the economic capability to purchase LPG, kerosene, or other alternatives, all these families will be provided with improved chullahs and LPG connections. This task will be undertaken by the respective forest divisions.

Most areas of the corridor can grow only one crop per year. As a result, agricultural waste is insufficient to meet fuel and fodder requirements. To address this, plantations of fuel and fodder species will be taken up over the next 10 years under the Rehabilitation of Degraded Forest Working Circle in the corridor.

All families in the corridor with an annual income of over ₹1 lakh will be motivated to use LPG instead of fuelwood. This will be achieved with the help of non-governmental organizations. Efforts will also be made to raise energy plantations on wastelands available in the villages within the corridor.

Villagers will be motivated to grow plants on their own land to become self-sufficient in fuel and fodder. They will be provided with plants of their choice at the stipulated rates by the forest department. Non-governmental organizations will assist in this task.

Many villages in the corridor hold immense potential for eco-tourism. The youth of these villages will be encouraged to form self-help groups and undergo tourism-related training through non-governmental organizations. The necessary eco-tourism infrastructure will be provided by the forest department as a one-time grant.

Special measures: -

The forests of the impediment areas mentioned are dense. The forests in the revenue areas of these links are also very dense. However, the forests of barriers 14 and 15 are open, and the number of trees is very low in the revenue areas of these impediments. Therefore, it is necessary to undertake large-scale plantations on the bunds of agricultural fields and encourage farmers to plant fruit-bearing and fodder-related tree species in their fields to generate regular income while also serving as corridors.

There is a large area of wasteland in some villages of the barrier areas. Pasture land development work will be undertaken on these lands over the next five years. This will ensure that the fodder requirements of the cattle in the area are met from these pastures, thereby reducing the pressure on the forests of these impediments.

5.8 HUMAN-WILDLIFE CONFLICT:

It refers to an interaction between wild animals and people and the resultant negative impact on people or their resources, or wild animals or their habitat. It occurs when growing human populations overlap with the established wildlife territory creating a reduction of resources or life for some people and/or wild animals.

Various forms of human and wildlife conflict may occur with various negative results. Some of these are:

- Domestic Animal Deaths
- Crop Damage
- Damage to Property
- Destruction of Habitat
- Injuries to People
- Injuries to Wildlife
- Livestock Depredation
- Life of human life such as Tiger attacks, Sloth bear attacks, etc.

5.8.1 HUMAN – WILDLIFE CONFLICT IN THE CORRIDOR:

Barriers 8, 13, and 15 mentioned in Chapter 9 are the most vulnerable areas for interaction between humans and wild animals. Apart from these barrier areas, there is also a likelihood of wild animals straying into fringe agricultural lands adjacent to the forest in this tract, which is enclosed by human habitations. Ungulates like spotted deer, blackbuck, and wild pig often stray into agricultural fields and cause crop damage.

Attacks by sloth bears on humans are evident, as reflected in the many cases registered throughout this tract of forest.

Road kills of ungulates by highway traffic are also reported along the road routes (Barriers 11, 12, and 13) that pass-through forest areas.

Langur and rhesus macaque menace is also observed in a few villages adjacent to this tract of the corridor.

5.9 PROPOSED MANAGEMENT:

ROAD NETWORK:

The possibilities of wildlife being injured / killed in accidents with high-speed vehicles on these roads are high.

Developing more roads in the Corridor will lead to a fragmentation of the habitat of wildlife. As the roads increase in length, there will be proportionate dilution in the quality of habitat. With increasing network of roads and falling quality of the habitat, the Corridor area will be fragmented into a number of patches. Thus, there will be an adverse impact on the gene pool of the wildlife.

Wildlife may find it difficult to crossroads to satisfy their needs and this will lead to a fall in the number of wild animals.

Air pollution and vibration will be the ill effects of road expansion, and this too will affect wildlife adversely. Speed limit will be regulated in NSTR corridor area decided by a Field Director and fines can be levied for such violation decided by NSTR Field Director.

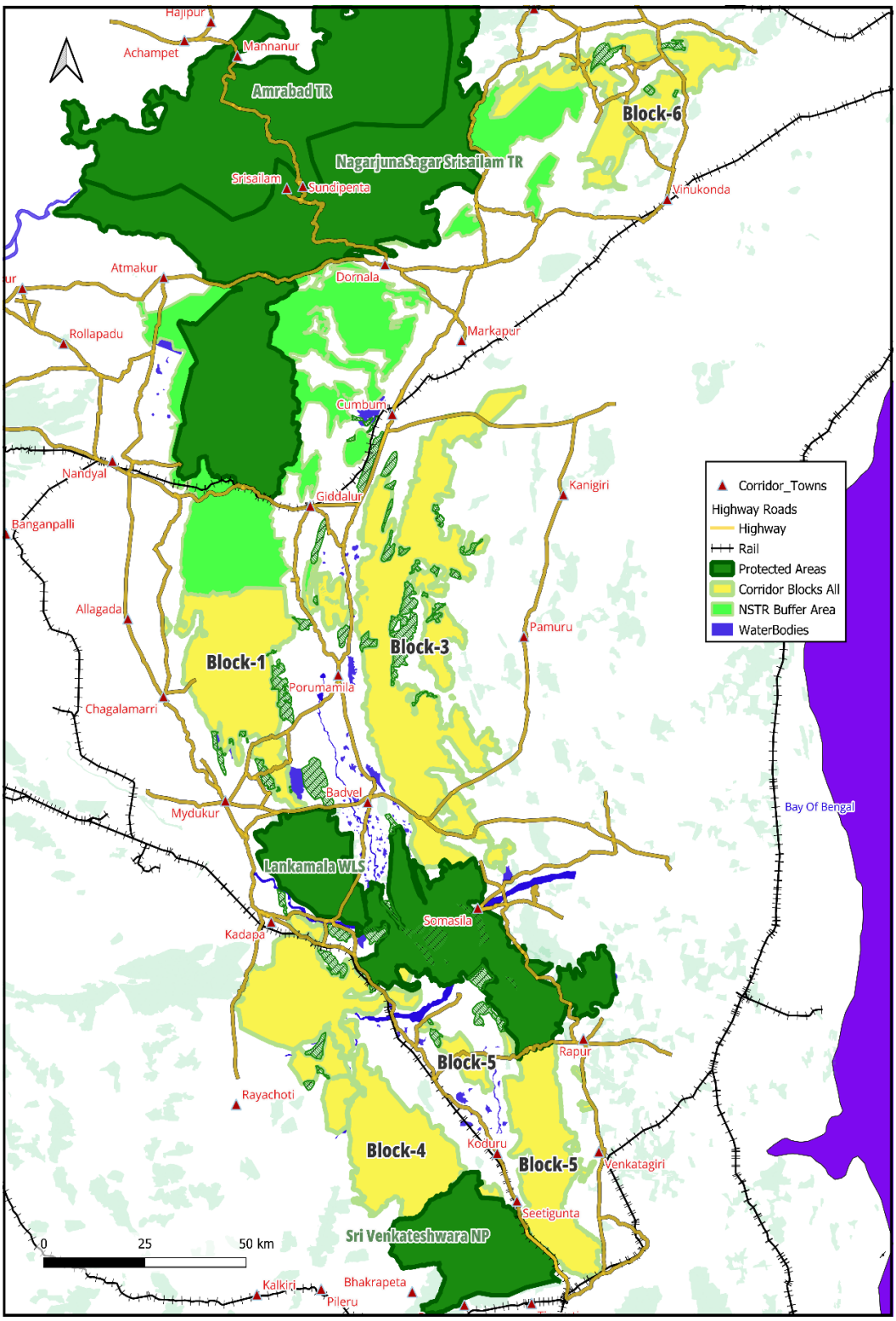
MEASURES TO BE TAKEN CONCERNING ROAD EXPANSION IN THE CORRIDOR:

The maximum speed limit for vehicles crossing the corridor shall be fixed at 40 km per hour in forest areas and 60 km per hour in revenue areas. This will significantly reduce road kills.

Different wild animals adopt different methods to cross obstacles. For instance, small animals like reptiles and squirrels prefer to pass through pipes or below culverts. Bears generally use box culverts, but deer avoid this route. Some animals readily cross through an overpass, while others do not hesitate to pass below a bridge. Thus, a single type of structure would not suffice for all animals crossing the road. Considering the needs of different species, one pipe structure and two to three small culverts should be constructed every 1 km on roads passing through the forest areas of the corridor.

At locations where the road crosses rivers or nallahs in the forest area, speed breakers will be constructed on either side of the bridge or culvert. The use of horns will be prohibited at these points. Signboards depicting the speed limit will be installed on all roads. No widening of the existing single-lane roads will be permitted in the future. Roads that have not yet been bituminized will be retained in their present state only, in harmony with the decision of the National Board for Wildlife.

Map 29: Map showing Road and Railway Networks in Corridors between Nallamalai and Seshachalam Hills



CROP DAMAGE BY WILD HERBIVORES:

Wild ungulates and primates tend to cause damage when crops are grown within or near their natural habitats. To address this, the following interventions are proposed: increasing tolerance for wildlife-related damage through education and providing compensation to affected farmers.

INCREASING TOLERANCE THROUGH "ECONOMIC INCENTIVES:

Reducing problem populations like langurs, blackbuck, etc., through translocation is proposed. Apart from this, the habitat should be well protected for these animals. During summers, water scarcity should be addressed, and "mineral and salt licks" should be provided at water holes and streams to meet the nutritional requirements of the animals.

ESTIMATED COST OF CORRIDOR PLAN:

The costs of various tasks in this management plan have been calculated based on the prevailing rates. This total estimate is indicative. When the tasks are implemented, the concerned Divisional Forest Officer will first prepare a detailed estimate and then submit a requirement for funds accordingly.

The following expenditure is estimated to be involved in the different types of work proposed to be undertaken in the Corridor:

WORK RELATED TO HABITAT IMPROVEMENT:

The proposals include boundary demarcation, which involves the construction and maintenance of boundary pillars, bamboo planting along the streams, decongestion of bamboo clumps, raising and maintenance of fodder plots and natural grasslands, providing salt licks, mineral bricks, etc. The following will be the cost involved:

Table 11 - Proposed works in the Corridor regarding Habitat improvement (Boundary demarcation)

Sl. No.	Description of work	Unit cost
1	Construction & maintenance of boundary pillars	Rs.10000/- per each
2	Raising and maintenance of fodder plots & natural grasslands	Rs. 20000/- per ha
3	providing salt licks & mineral bricks	Rs.3000/- per each
4	Weed Removal	Rs.20000/- per ha
5	Bamboo plantation	Rs.30000/- per ha
6	Decongestion of Bamboo clumps	Rs.20000/- per ha.

WORK-RELATED TO HABITAT PROTECTION:

The proposals are establishing & strengthening base camps, striking force, anti-poaching squad, check posts, construction of watch tower, providing rescue van, creation & maintenance of fire lines etc.

Table 12 - Proposed works in the Corridor regarding habitat improvement (Protection)

Sl. No	Description of work	Unit cost
1	Establishing & strengthening base camps	12 lakh/yr
2	Striking force	10 lakh/yr
3	Antipoaching squad	10 lakh/yr
4	Construction of watch tower	10 lakh/no
5	Check posts	4 lakh/yr
6	Rescue van	2 lakh/no
7	Creation & maintenance of fire lines	10000/km
8	Vaccination to cattle	2 lakh/yr
9	Human-Wildlife Conflict	2 lakh/yr

DRINKING WATER FACILITY FOR WILDLIFE:

The proposals are the construction & maintenance of saucer pits, and check dams. Percolation tanks, desilting the water holes, establishing solar pump sets, etc.

The following will be the costs involved.

Table 13 - Proposed works in the Corridor regarding habitat improvement (Water source)

Sl. No	Description of work	Unit cost
1	Saucer pits	20000/no
2	Check dams	200000/no
3	Percolation tanks	80000/no
4	Desilting & deepening the water holes	50000/no
5	Establishing solar pump sets	16 Lakh/yr

MISCELLANEOUS EXPENDITURE:

The proposals are creating awareness in various ways like sign boards, study tours, compensation for crop damage, wild attacks, office support, etc.

The following will be the costs involved.

Table 14- Proposed works in the Corridor regarding habitat improvement (awareness)

Sl. No	Description of work	Unit cost
1	Publicity &Extension	2 lakh/yr
2	Compensation	2 lakh/yr
3	Office support	2 lakh/yr

CHAPTER - 6

ECO-DEVELOPMENT AND LIVELIHOOD

6.1. Constitution of Adjoining Corridor Area Management Committee (With Representation of different Forest Divisions, Line Agencies and Other Stakeholders) Linkages with Tiger Conservation Authority.

Since the existing Panchayat system primarily caters to the needs of the people, there is hardly any focus on wildlife conservation. Eco-Development Committees (EDCs), in the context of tiger conservation, are local-level committees established to promote the coexistence of humans and wildlife, particularly in and around tiger habitats and corridors. These committees play a crucial role in mitigating human-wildlife conflict, supporting conservation efforts, and promoting sustainable livelihoods for local communities.

There must be an effort to identify similar interests or needs of user groups and bring them together as EDCs so that they can play a vital role in promoting sustainable development and conservation practices within tiger corridors. By addressing human-wildlife conflicts, supporting livelihoods, raising awareness, and fostering collaboration, EDCs contribute to the long-term viability of tiger populations and their habitats.

The EDCs act as an extension of the forest department and are useful for the following:

1. **Conflict Mitigation:** Conflict-oriented and specific EDCs in conflict-prone areas can help mitigate human-wildlife conflict and foster better management and coordination. EDCs work to reduce conflicts by implementing measures such as predator-proof livestock enclosures, crop protection methods, and early warning systems. By addressing conflicts between tigers and local communities, EDCs help foster tolerance and support for tiger conservation efforts.

2. **Habitat Restoration and Management:** In areas requiring restoration, efforts to improve the habitat can be identified in collaboration with villages abutting these regions. Restoration-oriented EDCs can engage in habitat restoration and

management activities within tiger corridors to enhance connectivity and ecological functionality. This may include reforestation, habitat rehabilitation, and invasive species control to improve habitat quality for tigers and other wildlife species. Care should be taken to avoid promoting residency in non-protected areas (PAs)

3. **Livelihood Support:** EDCs implement sustainable livelihood initiatives that provide alternative sources of income for local communities who are dependent on natural resources found in tiger corridors. This could include eco-tourism, handicraft production, sustainable agriculture, value addition to NTFP, bamboo crafting, and agroforestry, which reduce reliance on activities that may lead to habitat destruction or wildlife poaching.
4. **Community Engagement and Awareness:** EDCs facilitate community engagement and awareness programs to educate local residents about the importance of tiger conservation and the role of corridors in maintaining healthy tiger populations. These programs may involve workshops, training sessions, school outreach, and awareness campaigns to promote coexistence and conservation stewardship.
5. **Collaboration and Partnership:** EDCs can collaborate with government agencies, non-governmental organizations, conservation groups, and other stakeholders to leverage resources, expertise, and support for tiger corridor conservation initiatives. Further, they can be encouraged to raise local money from other government schemes like free gas connections, green energy, gobar gas plants, etc. By fostering partnerships and collaboration, EDCs enhance the effectiveness and impact of conservation efforts.

However, it should be taken with caution that turning the forest department away from its main duty of protection by involving them in works that are the primary functions of rural development might not be a good idea. As the department is already facing a crunch of workforce, diverting the staff away from their core functions should be taken up with caution. Otherwise, firstly, the forest suffers as the role of the protector changes character. Secondly, forest officials, not trained in general to handle such situations, find it difficult to implement projects.

Eco-development activities in the fringe villages will be implemented through the Field Director in charge of Tiger Reserves. Because of the wide range of activities involved, it would be essential to associate different development departments, viz. Animal Husbandry, Horticulture, Primary Health, Agriculture, Soil Conservation, Fishery, Tribal Welfare, Small Industries, etc., while in selected areas experts from such departments may be required to be taken on deputation for planning and implementing the eco-development programs. It is important that these departments are actively associated with the scheme.

It will therefore be necessary to constitute a District Level Coordination Committee under the leadership of the District Collector and the concerned Deputy Director/Divisional Forest Officer of the Tiger Reserve as the Member Secretary. This would also facilitate sectoral integration and the pooling of resources. The committee should include representatives of the line departments, the NGOs, and the concerned Grama Panchayat president. The committee should meet at least once in six months, and the minutes of the meetings should be included in the proposals for Central assistance under the Project Tiger scheme.

During the interactions with stakeholders of the corridor area, Grama Sabhas have been convened to inform and create awareness about the wildlife and the corridor, and through the PRA exercise, the socio-economic data has been collected to assess the needs of stakeholders for eco-development works. The dependency has been assessed, and needs were taken into consideration to develop rapport with the villagers.

6.2. Vana Samrakshana Samitis/Edcs

Existing Vana Samrakshana Samithies (VSSs)/EDCs will take the responsibility of implementing the Eco-Development Plan in the corridor as per the operational guidelines issued from time to time by the Government of Andhra Pradesh and the Forest Department. For the formation of new VSSs/EDCs, the existing guidelines are to be followed. The VSSs/EDCs will include the conservation agenda in the corridor as a reciprocal commitment in place of eco-development. The different components in Eco-Development will be as follows:

Community Asset Building:

In order to increase the facilities for the people the following kinds of community asset-building activities will be undertaken in the EDCs. People have to contribute 25% and the Government contribution would be 75% only.

- Eco-centre: Community Hall.
- Ration shop construction.
- Bore well and overhead tank
- Roads in the villages.
- Drainage and sanitation improvement.
- Facilities for schools/furniture supply
- Check dams.

6.3. Sustainable Alternative Livelihood System

The concept of sustainable alternative livelihood systems refers to the development and promotion of economic activities that provide viable alternatives to communities whose livelihoods may depend on activities that are harmful to the environment or wildlife, such as habitat destruction, poaching, or unsustainable resource extraction. In the context of tiger conservation, sustainable alternative livelihood systems aim to alleviate pressure on tiger habitats and populations by offering local communities alternative sources of income that are compatible with conservation objectives.

Sustainable alternative livelihood systems involve diversifying the economic activities available to local communities, reducing their dependence on activities that may negatively impact tigers and their habitats. This may include promoting sustainable agriculture, eco-tourism, handicraft production, small-scale enterprises, and other income-generating activities that have minimal environmental impact.

To facilitate the transition to sustainable livelihoods, capacity-building and training programs are essential. These programs provide community members with the skills, knowledge, and resources needed to engage effectively in alternative livelihood activities. Training may cover topics such as sustainable land management, eco-tourism operations, business development, and natural resource conservation.

Sustainable alternative livelihood systems require access to markets where products and services can be sold or traded. Efforts to connect local producers with markets, both locally and internationally, can help ensure the economic viability of sustainable livelihood activities. Additionally, providing communities access to necessary resources, such as land, capital, technology, and infrastructure, is crucial for successful livelihood diversification.

Collaboration between government agencies, non-governmental organizations, private sector entities, and local communities is essential for the successful implementation of sustainable alternative livelihood systems. Partnerships can provide funding, technical expertise, market linkages, and other forms of support to help communities establish and sustain alternative livelihood initiatives.

Sustainable alternative livelihood systems should be community-driven and participatory, with local communities actively involved in decision-making processes and project implementation. Empowering communities to take ownership of their livelihoods fosters a sense of responsibility and pride, leading to greater long-term sustainability and success.

Finally, monitoring and evaluation mechanisms are necessary to assess the effectiveness and impact of sustainable alternative livelihood systems. Regular monitoring allows for tracking progress, identifying challenges, and adjusting strategies as needed to ensure that livelihood interventions meet their conservation and development objectives.

To initiate this, it is proposed that some funds be earmarked for microcredit to be provided to individuals as well as to self-help groups for starting micro-enterprises as sustainable alternative livelihood options. Alternative income-generating programmes will also be taken up in the fringe villages of the corridor area to reduce dependency on the protected areas of the corridor.

Energy Efficeint Conservation Device

In order to reduce the pressure on forests on fuel wood resources, alternative energy-saving devices are to be provided to the people and they are listed below.

- Husk chullah
- LPG connection

- Hot point stove
- Pressure cookers
- Biogas domestic plants
- Solar cooking stove
- Solar heaters.

Biomass Regeneration

To create biomass resources outside the forests, the following activities may be undertaken

- Home stead tree planting – coconut seedlings and fruit seedlings (mango, guava, pomegranate, gooseberry sapota, etc.,)
- Agro-forestry with valuable timber and horticulture crops
- Fuelwoods like acacia plantation and neem plantations.
- Road Avenue plantations.
- Fodder farms.

Human Resource Development

To improve various skills of the people for choosing their livelihood various training programs with agencies like Industrial Training Institutes, Skill India programme etc are to be conducted and some of them are listed below.

- Jute bag-making
- Tailoring training.
- Driving training.
- Embroidery designing.
- Bee hiving.
- Pickle making.
- Candle Making
- Furniture making
- Computer software & Hardware training
- Air conditioning mechanism

Education and health must be given top priority for the development of people living in the buffer area. It is also suggested that evening tuition centers be started for the benefit of poor students. Books, uniforms, and shoes should be given to the students free of cost.

6.4. Monitoring & Evaluation

It is necessary to monitor and evaluate eco-development programs to ensure their success. In this regard, specific parameters would be selected to monitor and review different activities in the context of the project's output. The evaluation would help determine successes, failures, and problems, and appropriate suggestions would be applied to improve the program at regular intervals. Monitoring and evaluation will be carried out by external agencies.

Under the eco-development program, to develop a good rapport with stakeholders for the conservation of natural resources, the creation of infrastructure and other alternative income generation sources has been proposed during the plan period.

Eco-Tourism

Eco-tourism zones offer a unique opportunity to harness the economic potential of natural landscapes while fostering positive relationships between visitors and the environment. However, their development must be approached with caution to mitigate potential adverse impacts on conservation efforts. If managed responsibly, these zones can become valuable tools for supporting local communities, generating sustainable revenue streams, and fostering a deeper appreciation for nature.

In the context of eco-tourism ventures, maintaining a delicate balance between economic development and environmental preservation is paramount. The success of such initiatives depends on integrating three key pillars: nature education, support for local livelihoods, and habitat conservation.

Nature education initiatives within tourism zones provide visitors with valuable insights into the ecological significance of the area, promoting awareness and appreciation for the natural world. Through interpretive signage, guided tours, and educational programs, visitors can gain a deeper understanding of the local flora, fauna, and ecosystems, fostering a sense of stewardship and responsibility toward conservation.

Supporting local livelihoods is another essential aspect of sustainable tourism development. By creating employment opportunities, facilitating skill development, and promoting community-based enterprises, tourism zones can contribute to the economic empowerment of residents. This enhances socio-economic well-being and

fosters a sense of ownership and pride among community members, encouraging their active participation in conservation efforts.

Furthermore, ensuring the preservation of habitat integrity is crucial for the long-term sustainability of tourism zones. This involves implementing measures to minimize environmental impacts, such as sustainable infrastructure development, waste management systems, and visitor-carrying capacity limits. Additionally, engaging in habitat restoration and conservation projects can help mitigate any negative effects of tourism activities on the local ecosystem.

Therefore, the establishment of tourism zones presents a valuable opportunity to harmonize economic development with environmental conservation. By prioritizing nature education, supporting local livelihoods, and safeguarding habitat integrity, these zones can serve as models of sustainable tourism that benefit both people and the planet.

CHAPTER -7

TIGER POPULATION AND HABITAT ASSESSMENT

7.1. Day-to-Day Monitoring Protocol

Tigers have been moving in the corridor areas, breeding in the Ahobilam Proposed Sanctuary block, and have, in the recent past, dispersed to other areas like Lankamala, SVNP, and the Atmakur Range. Tigers have also been recorded moving in the Vinukonda and Macherla ranges of the Palanadu Division. On several occasions, tigers may be using the corridor areas but go undetected due to a lack of awareness or monitoring. Corridor areas must initiate the monitoring of tigers and their prey and assess habitat conditions, including threats to the habitat, on a routine basis. A special team of animal trackers can be deployed to initiate this exercise, selected based on their knowledge of local areas. It is proposed that at least 3–4 animal trackers be recruited in every range, especially in the 'Core Corridor' landscape.

For any monitoring plan to be initiated, a few essential maps are required, such as a resource map, threat map, and control map. These will be used to plan routine monitoring patrols. Day-to-day monitoring should include patrolling strategically important areas like waterholes, crossing points, important junctions, etc. Animal trackers should be trained to collect data using the prescribed proforma or patrol-based apps like M-Stripes. The data can be recorded in registers, collated at the range office, and entered into spreadsheets. Additionally, field officers should accompany the trackers in the field and monitor the work at least once a week.

Data to be collected from the field should include location details, indirect signs like pugmarks, scats, scrape marks, pellets, hoofmarks, etc., as well as direct sightings or animal calls. Each sign should be recorded along with GPS coordinates, and patrolling routes should be stored as track logs in GPS devices or Android-based apps.

7.2 Monitoring Programme by NTCA

The Tiger Population Estimation Framework implemented during Phases I to IV of tiger monitoring under the National Tiger Conservation Authority (NTCA) in India is a systematic approach to assess the status and trends of tiger populations across tiger habitats.

Overview of the Framework:

Phase I – Spatial mapping and monitoring of tigers, co-predators, prey, and habitat
Phase II – Spatial and attribute data collection.

Phase III – Estimating the population of tigers, co-predators, and prey based on Phase I and Phase II data.

Phase IV – Intensive monitoring of the source population

Baseline Data Collection and Spatial Mapping:

The framework begins with collecting baseline data on tiger populations, prey densities, and habitat characteristics across the entire tiger range. This involves conducting surveys, camera trapping, and field assessments to gather information on tiger abundance, distribution, and habitat use. The baseline data should be collected simultaneously so that all the tiger corridor areas are covered together. Carnivore sign surveys help in understanding areas used by tigers or other co-predators. This exercise is proposed twice a year, involving all frontline staff, ensuring proper coverage of the landscape. Data on direct or indirect evidence will help establish a reliable baseline database.

Camera Trapping Surveys:

Tiger monitoring is conducted using camera trapping as a key component of the framework, where motion-triggered cameras are strategically placed in tiger habitats to capture images of individual tigers. Camera trap data provide valuable insights into tiger demographics, movements, and behaviour, which are used to estimate population size and density. These data are analysed using spatial capture-recapture techniques to estimate population parameters such as abundance, density, and survival rates.

Statistical models are applied to account for factors such as individual identification, trap effort, and detection probability to derive accurate population estimates.

Prey Density Surveys:

Surveys are conducted simultaneously to estimate the density of tiger prey species such as ungulates (e.g., deer, wild pig) and other key prey animals. Prey density data are essential for assessing the carrying capacity of tiger habitats and predicting prey availability for tigers. In large areas, encounter rate surveys can be planned as a surrogate for intensive prey monitoring, which can be time-consuming and costly.

Habitat Assessment:

Alongside prey density surveys, habitat assessments are conducted to evaluate the quality, extent, and connectivity of tiger habitats. This includes mapping habitat types, identifying core habitats and corridors, and assessing conditions such as vegetation cover and water availability.

Data Validation and Quality Assurance:

Rigorous validation and quality assurance protocols are implemented to ensure the accuracy and reliability of monitoring data. This involves cross-checking camera trap images, verifying species identifications, and assessing the precision of population estimates.

Reporting and Capacity Building:

Results from tiger population estimation surveys must be compiled into comprehensive reports summarizing key findings, population trends, and conservation recommendations. Capacity-building initiatives involving subject experts should be conducted to enhance the skills and expertise of field staff, researchers, and conservation practitioners engaged in tiger population estimation. Training programs should focus on data collection methods, statistical analysis techniques, and conservation planning.

7.2.1. Protocol For Carnivore Sign Survey

●Sign surveys need to be carried out on three different identified trails (trek paths, animal tracks, roads, etc.) once a month.

●All the trails need to be surveyed during the second week of the month.

● A minimum of 15 km in total (across all trails combined) in each section needs to be covered during each sampling.

● Preferably, three persons should walk along the trail (one observing in the front and the other two observing either side of the trail).

● Search thoroughly on both sides of the trail to collect all indirect evidence.

● Walk silently during the survey.

● Observe indirect evidence such as pugmarks, scats, scrapes, scratches, kills, and animal sounds, including those of tigers, leopards, wild dogs, and sloth bears.

● Every indirect sign should be recorded properly with the species name, type of sign, etc. (as given in the datasheet) along with the GPS location.

● Remove the indirect signs after recording to avoid repeated counts during later surveys.

● Signs that cannot be identified correctly should not be recorded.

● Sightings of any pugmarks of tigers or leopards along the trail should be marked using GPS location.

● Only the pre-fixed trails for the sign survey should be walked during the sampling period; trails should not be altered under any circumstances.

● The filled-in data sheets should be submitted by the section staff to the concerned Range Officer immediately upon returning to headquarters.

● The concerned Range Officer should submit the verified data sheets to the Deputy Directors for further analysis with the support of the Field Director.

7.2.2 Protocol For Camera Trapping

● Select areas for deploying camera traps based on sign surveys carried out every month using MSTrIPES and the 8-day protocol, along with camping sites.

● The interval between two camera trap sites should be 2 to 3 km. In other words, every 4–6 km² should have a pair of camera traps.

● Overlay the trap sites on a map with a grid well in advance and describe the trapping team's area of responsibility.

●Camera traps should always be placed in pairs.

● Cameras should be positioned at a height of 0.6 to 1 meter, not facing each other, to capture photographs of both flanks of the individual.

● Cameras must be kept in iron cases to prevent damage from wild animals and secured to trees using belts and chain locks.

● The distance between cameras deployed in pairs should be about 8–10 meters.

● Cameras should remain in the same location continuously for 40–45 days to capture recaptures of tigers and leopards.

● A few reserve cameras should be kept ready for replacing malfunctioning or damaged cameras.

● After deploying the camera, the team should record the GPS location of the site and communicate it to the headquarters via wireless.

●Verify the GPS point on the map to ensure proper placement.

● If any changes are needed in the camera location, inform the field team immediately to shift it appropriately.

●Cameras should be inspected at least twice a week wherever possible.

● After completing the trapping period (after 45 days of deployment), cameras should be brought back to the headquarters by the team.

●Process all images after downloading.

●Identify the photographs using the reference image library.

● Prepare the capture history after completing the camera trap exercise throughout the reserve.

● Analyze the capture history using **CAPTURE** software to estimate population sizes.

● The following Base Camps/Patrolling Camps have been designated as the headquarters for field-level monitoring of M-STrIPES.

7.3 Analysis and Reporting Framework and Periodicity

Forest areas (blocks/beats) falling within the corridor are not notified as protected areas; they are classified as reserved forests only. As per the NTCA guidelines, monitoring of tigers, co-predators, prey, and their habitats will be carried out in the following stages:

- Sampling for tiger, leopard, and other carnivore sign encounter rates.
- Sampling for ungulate encounter rates.
- Sampling for vegetation, human disturbance, and ungulate pellet counts.

The above sampling will be carried out annually and submitted for analysis of the tiger population.

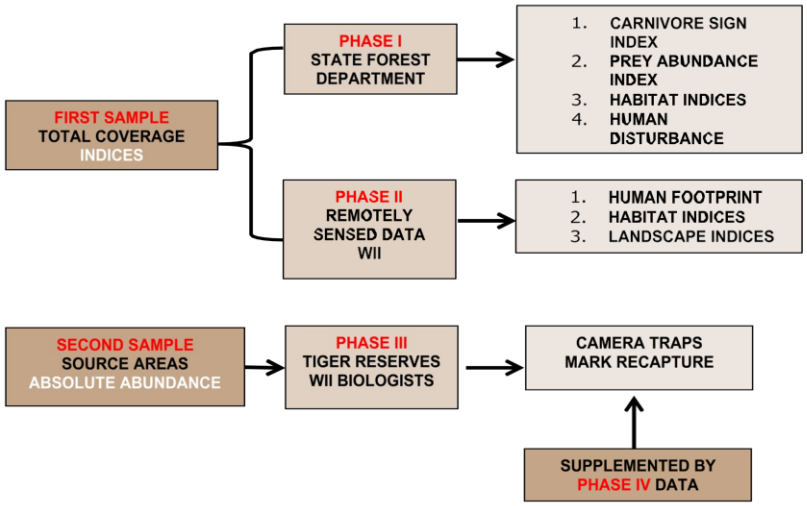
By implementing the Tiger Population Estimation Framework during Phases I to IV, NTCA aims to generate scientifically robust data on tiger populations and their habitats. This information is essential for evidence-based conservation planning, adaptive management, and the sustainable management of tiger habitats in India.

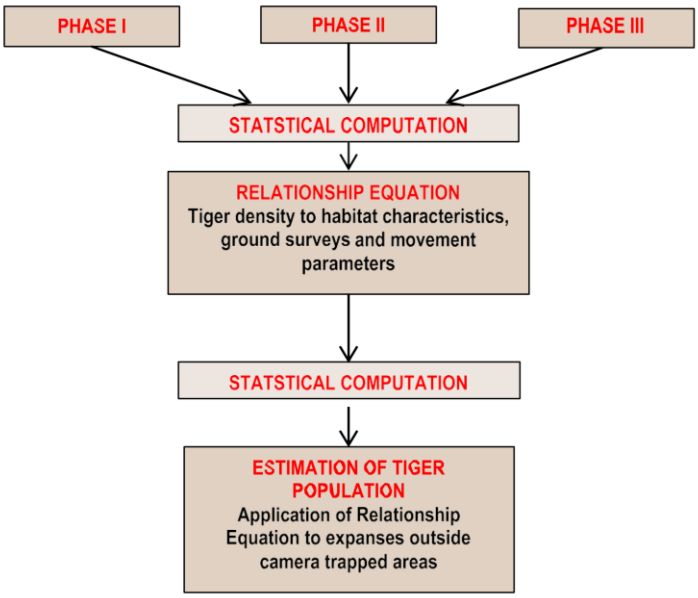
As part of the National Programme on Monitoring Tigers, Co-Predators, Prey, and their Habitat (NTCA guidelines), the goal of the program is to collect systematic data on all aspects related to tiger conservation and collate the findings for future analysis and monitoring at the landscape level.

A four-phase approach (flow chart) is followed for this purpose.

The framework adopts an adaptive management approach, where monitoring findings are used to refine conservation strategies, adjust management priorities, and address emerging conservation challenges. Continuous monitoring and evaluation ensure that conservation efforts remain effective and responsive to changing conditions.

Based on the guidelines, tiger monitoring in the Reserve is carried out as part of National level exercise at the 4-year intervals and data is analyzed at landscape level by WII. The Field Director provides training to the staff and compiles data collected by field staff. This monitoring will be continued as part of the National programme.


FIRST SAMPLE
TOTAL COVERAGE
INDICES
PHASE I
STATE FOREST
DEPARTMENT
1. CARNIVORE SIGN INDEX
2. PREY ABUNDANCE INDEX
3. HABITAT INDICES
4. HUMAN DISTURBANCE
PHASE II
REMOTELY
SENSED DATA
WII
1. HUMAN FOOTPRINT
2. HABITAT INDICES
3. LANDSCAPE INDICES
SECOND SAMPLE
SOURCE AREAS
ABSOLUTE ABUNDANCE
PHASE III
TIGER RESERVES
WII BIOLOGISTS
CAMERA TRAPS
MARK RECAPTURE
SUPPLEMENTED BY
PHASE IV DATA


PHASE I
PHASE II
PHASE III
STATSTICAL COMPUTATION
RELATIONSHIP EQUATION
Tiger density to habitat characteristics, ground surveys and movement parameters
STATSTICAL COMPUTATION
ESTIMATION OF TIGER POPULATION
Application of Relationship Equation to expanses outside camera trapped areas

CHAPTER -8

Organization, Administration and Budget

8.1. Organization Committee for Effective Implementation and Management and Linkages with Tiger Steering Committee and Tiger Conservation Foundation.

The Wildlife (Protection) Act, 1972 was amended in 2006, and a separate chapter (Chapter IVB) has been provided, which, *inter alia*, provides for constituting the National Tiger Conservation Authority (NTCA), its powers and functions, reporting requirements, constitution of State-level Steering Committees, preparation of the Tiger Conservation Plan, explanation regarding the core or critical tiger habitat and the buffer or peripheral areas of a tiger reserve, and establishment of the Tiger Conservation Foundation. The above statutory provisions have been incorporated to strengthen tiger conservation in the country vis-à-vis the urgent recommendations of the Tiger Task Force constituted by the National Board for Wildlife.

The Corridor Coordination Committee plays a crucial role in facilitating the effective implementation and management of tiger conservation initiatives, as well as establishing linkages with key stakeholders such as the Tiger Steering Committee and Tiger Conservation Foundation. Here's how these components work together:

Effective Implementation and Management: The Coordination Committee serves as a central body responsible for coordinating and overseeing various aspects of tiger conservation efforts. This includes the implementation of conservation projects, monitoring of tiger populations, enforcement of wildlife laws, and engagement with local communities and stakeholders. By bringing together representatives from government agencies, conservation organizations, research institutions, and local communities, the Coordination Committee ensures a collaborative and integrated approach to tiger conservation. Since we are dealing with India’s largest tiger reserve and one of the country’s largest tiger landscapes, it is proposed that three such committees are made for each section: NSTR-Buffer Section, Nallamala-Lankamala Section, and Lankamala-Sheshachalam Section.

Linkages with Tiger Steering Committee: Section 38U of the Wildlife Protection Act, 1972 mandates:

"The State Government may constitute a Steering Committee for ensuring co-ordination, monitoring, protection and conservation of tiger, co-predators and prey animals within the tiger range States."

The Tiger Steering Committee, often comprised of high-level government officials, policymakers, and conservation experts, provides strategic guidance and oversight to tiger conservation initiatives at the state level. The Coordination Committee establishes linkages with the Tiger Steering Committee to align local conservation efforts with national and regional priorities, policies, and funding mechanisms. Regular communication and reporting between the two committees facilitate coordination, resource mobilization, and knowledge exchange for effective tiger conservation.

Linkages with Tiger Conservation Foundation: Tiger Conservation Foundations (TCFs) are non-profit organizations dedicated to supporting tiger conservation through fundraising, advocacy, capacity building, and on-the-ground projects. The Coordination Committee collaborates with TCFs to leverage their resources, expertise, and networks in implementing conservation activities at the grassroots level. This partnership enhances the reach and impact of tiger conservation efforts, particularly in areas where government agencies may have limited capacity or funding. Further, maintenance of corridor areas, protection, habitat enrichment, and management activities can be funded by the Tiger Conservation Foundation. Further, there should be some user fees collected at least in the Protected Areas and key corridor areas to self-sustain the corridor management with the help of TCF. The user agencies for developmental projects can also be asked to support the corridor management in place of the diversion or expansion projects in the corridor region.

Information Sharing and Collaboration: The Coordination Committee serves as a platform for sharing information, best practices, and lessons learned among stakeholders involved in tiger conservation. Regular meetings, workshops, and knowledge exchange events facilitate collaboration, innovation, and mutual support in addressing conservation challenges. By fostering a culture of transparency, communication, and partnership, the Coordination Committee strengthens the collective effort towards conserving tigers and their habitats. Public messaging like

speed limits, animal crossings, corridor area demarcations, etc., can be done with effective signage envisioned in the Coordination Committee. Ongoing activities, tiger movement, habitat and wildlife photos/videos, and best practices in the tiger corridor area can be shared with the entire corridor region by having a newsletter and common social-networking groups.

Overall, the Coordination Committee plays a vital role in driving synergy, coherence, and effectiveness in tiger conservation initiatives by coordinating efforts, aligning priorities, and forging partnerships with key stakeholders at both the national and local levels. Through strategic collaboration and coordination, the Committee contributes to the sustainable management and conservation of tiger populations for future generations. The Corridor Area Coordination Committee, in coordination with the Tiger Steering Committee, shall help in facilitating ecological, economic, social, and cultural development of the corridor area. It shall coordinate in facilitating the creation and maintenance of the assets. It will also assist in augmenting and mobilizing financial resources, including recycling of entry fees and other fees. It also coordinates in support of research, environmental education, and training. It will also assist the Tiger Steering Committee to review the implementation of the state-level Tourism and Eco-tourism strategy in Tiger Reserves.

8.2. Coordination with EDCs Confederation and Other Line Agencies / Departments / Production Sectors:

Coordination with the EDCS (Environment, Development, and Conservation Sector) Confederation and other line agencies, departments, and production sectors is essential for effective tiger conservation and sustainable development.

Information Sharing and Collaboration: Establish mechanisms for regular information sharing and collaboration between the Tiger Steering Committee and the EDCS Confederation, as well as other relevant agencies and departments. This ensures that all stakeholders are informed about conservation priorities, initiatives, and challenges.

Joint Planning and Decision-Making: Encourage joint planning and decision-making processes that involve representatives from the Tiger Steering Committee,

EDCS Confederation, and relevant line agencies. This promotes coherence and alignment of conservation and development goals, avoiding conflicts and maximizing synergies.

Policy Integration: Ensure integration of tiger conservation priorities and objectives into broader environmental, development, and conservation policies and strategies promoted by the EDCS Confederation and other line agencies. This helps mainstream conservation considerations into broader development agendas.

Cross-Sectoral Collaboration: Foster collaboration across sectors such as forestry, agriculture, tourism, infrastructure, and energy to address the underlying drivers of habitat loss, fragmentation, and human-wildlife conflict. Encourage joint initiatives that promote sustainable land use, livelihood development, and infrastructure planning while minimizing adverse impacts on tiger habitats.

Capacity Building and Training: Provide capacity-building support and training programs to build awareness and enhance skills among stakeholders from the EDCS Confederation, line agencies, and production sectors on tiger conservation principles, best practices, and relevant policies.

Public-Private Partnerships: Explore opportunities for public-private partnerships to leverage resources, expertise, and technology for tiger conservation and sustainable development initiatives. Engage production sectors such as agriculture, forestry, and tourism in conservation efforts through corporate social responsibility (CSR) initiatives and sustainable business practices.

Monitoring and Evaluation: Establish joint monitoring and evaluation mechanisms to track the progress and effectiveness of conservation and development interventions. This allows stakeholders to assess the impact of their actions, identify areas for improvement, and adapt strategies as needed.

Community Engagement: Involve local communities and indigenous peoples in conservation and development decision-making processes, ensuring their

participation, ownership, and support. Collaborate with community-based organizations and grassroots networks to implement conservation projects that promote local livelihoods and enhance community resilience.

By fostering collaboration and coordination among the Tiger Steering Committee, EDCS Confederation, line agencies, and production sectors, a holistic approach to tiger conservation and sustainable development can be achieved, ensuring the long-term survival of tigers and their habitats while promoting human well-being and prosperity.

a) The corridor zone shall be under the unified control of the Field Director of the tiger reserve. Similarly, the District-Level Coordination Committee, as follows, is formed with the District Collector as the Chairman and the Deputy Director / Divisional Forest Officer concerned of the Tiger Reserve as Member Secretary, mainly to ensure convergence of other sectors. The District-Level Coordination Committee comprises of as following:

Table 15 - District level coordination committee for Corridor Management

i)	District Collector of the concerned District	Chairman
ii)	CEO, Zilla Parishad	Member
iii)	Representative officials from PWD, Social Welfare, Tribal Department, Health Department Agriculture department, Education Department, Power and Irrigation departments	Members
iv)	Representatives of various Government /Private production sectors	Members
v)	Deputy Director concerned of the Tiger Reserve / PA	Member Secretary

The District-Level Coordination Committee and the Confederation of EDCs shall work in coordination for the management of the corridor area in achieving the objectives. Further, better coordination is ensured as the District Collector is the controlling officer for all the departments in the district.

Staff Deployment:

Structure and Responsibilities: The Field Director of the NSTR Tiger Reserve is the Deputy Chief Wildlife Warden and is responsible to the Chief Wildlife Warden, A.P.

The District Forest Officers of Tirupati, Annamayya, Nandyal, and Kadapa will assist the Field Director.

8.3. Staff Deployment, Protection Strategy, And Linkages with Tiger Cell and Corridor Zone Striking Force

The anti-poaching squad, base camp watchers, animal trackers, etc., are to be employed from the local workforce. This will not only increase the workforce at the disposal of the department but will also help forest dependents gain alternative employment.

8.3.1 Control Records

The prescriptions given in each of the individual theme plans are to be followed in implementing the corridor management plan. The various treatment practices and prescriptions carried out are to be indicated/recorded in control records and maps, which are to be maintained by the respective Forest Range Officers. The posting and maintenance of these records and maps is a matter of vital importance to keep track of events, which will help in monitoring the progress of implementation and conducting analysis.

Due to the non-availability of proper control records, much difficulty is being faced in tracking and comparing the information on past work during the preparation of this corridor management plan, as no proper control records and maps were maintained earlier.

The following types of control records shall be maintained:

- Control Journal.
- Control Book

8.3.2. Control book: -

The progress of prescriptions of the management plan shall be recorded regularly according to location and strategy duly recording the observations.

8.3.3. Control journal

The control journal prescribed shall contain the following items in proforma shape and the details should be periodically recorded by the Forest Section Officer / Forest Range Officer:

i) Locality ii) Climate iii) Rainfall iv) Forest type v) Incidence of Grazing vi) Incidence of fire vii) Soil erosion status	viii) habitat improvement ix) Sighting of wildlife x) Encroachment problems xi) Poaching xii) protection status xiii) Operation carried out.

8.3.4 Compartment Histories: -

During the previous working plans, efforts were made to prepare compartment histories, but they were not updated periodically. It is proposed to update all the compartment histories during the initial period of this management plan, and they will be updated annually.

8.3.5. Division corridor management book and Range corridor management book: -

These books shall be maintained at division and range levels. All the work undertaken as per the strategies proposed, and any problems, if any, shall be recorded in the corridor management books. Any deviations from the prescriptions provided in this management plan shall also be recorded, along with all noteworthy occurrences that have a bearing on the management and improvement of the corridor area, as well as observations regarding the status of faunal and floral species. Every entry should be dated and signed by the concerned officer.

8.3.6 Control Forms: -

The standardized forms that are in use for keeping a watch on the progress of various prescriptions are proposed to be maintained and regularly updated during this management plan period.

Corridor Protection: Develop strategies for the protection and management of tiger corridors. This may include land acquisition, habitat restoration, creating wildlife

corridors over or under roads, implementing buffer zones around corridors, and mitigating human-wildlife conflicts.

Monitoring and Adaptive Management: Implement monitoring programs to track tiger movements and assess the effectiveness of corridor conservation measures. Adjust management strategies as needed based on new data and changing conditions.

- Implementing sustainable grazing management practices, such as rotational grazing, rest periods, and stocking rates tailored to the carrying capacity of ecosystems.
- Promoting community-based natural resource management and participatory approaches to involve local communities in decision-making and conservation efforts.
- Establishing protected areas and buffer zones to conserve critical habitats and biodiversity hotspots.
- Conducting outreach and education programs to raise awareness about the impacts of overgrazing and promote sustainable land use practices.
- Strengthening law enforcement and monitoring mechanisms to regulate grazing activities and prevent illegal encroachment and overexploitation of forest resources.

ANNEXURE - I

Linear intrusions: Scope and mitigation for endangered wildlife in the tiger corridors of Andhra Pradesh and Telangana

PURPOSE OF THE DOCUMENT:

The purpose of this document is to suggest enhanced mitigation measures to minimise and compensate for the adverse effects of existing linear infrastructure (roads) on wildlife in the tiger corridors of Andhra Pradesh and Telangana. We propose conducting multiple studies ranging from evaluating the rate of Wildlife Vehicle Collisions (WVCs) on roads with some degree of existing preventive measures and on roads with no apparent safeguards, to studies that evaluate roadside habitat use by mammals at different distance bands, as well as long-term monitoring of some sections of roads at multiple locations. These studies aim to generate a list of high-risk species involved and to map associated safe and unsafe passage zones. The proposed studies will be aimed at prescribing a suite of mitigation strategies based on the unique ecological and behavioural requirements of each target species involved.

ISSUES WITH LINEAR INTRUSIONS:

Rail, road, canals, fences, and high-power transmission lines are some of the major linear intrusions affecting the movement and survival of wildlife in the tiger-bearing forests of Andhra Pradesh and Telangana. As these structures are indispensable for the movement of people and resources from remote locations to population centres, mitigation measures are required to reduce wildlife mortality and retain connectivity within the fragmented habitats.

Linear intrusions create a unique set of political, social, and technical challenges as they traverse multiple jurisdictions, protected lands, and sensitive landscapes. In Andhra Pradesh and Telangana, these challenges are compounded by their potential impact on the few remaining tiger populations. Habitat fragmentation, dissection, conversion or loss, and direct mortality due to Wildlife Vehicle Collisions are some of the possible adverse effects.

Annexure - II

LEGAL FRAMEWORK RELATING TO LINEAR INTRUSIONS IN INDIA:

In India, the Environment Impact Assessment (EIA) Notification of 2006, along with legal provisions of the Forest (Conservation) Act, 1980, Wildlife (Protection) Act, 1972, and Coastal Regulation Zone (CRZ) Notification, 2011, regulates the approval process of the linear development projects at national and state/union territory levels.

Linear projects fall into either A or B category of Schedule I of the EIA Notification, 2006. Category A environment clearances (EC) are addressed by the central government with the help of the Ministry of Environment, Forest and Climate Change (MoEFCC) through an Expert Appraisal Committee (EAC). The State Environment Impact Assessment Authority (SEIAA) grants ECs through a State-level Expert Appraisal Committee (SEAC) for sub-category B1, while the sub-category B2 projects do not require an EIA — this includes powerline projects and roads in border areas.

Category A projects include new national highways, expansion of highways greater than 100 km, and right of way or land acquisition greater than 40 metres on existing alignments and greater than 60 metres on re-alignments or bypasses.

Category B1 includes all new state highway projects and state highway expansion projects in hilly terrain (above 1000 m AMSL) and/or ecologically sensitive areas, with a general condition that if the proposed projects within categories B1 and B2 are to be located within close proximity of, or within a 10 km boundary of, sensitive areas, critically polluted areas, and/or culturally significant sites, then they are assigned to Category A.

Some of the categories defining sensitive sites of interest are mentioned in the table below:

Types of Protected Areas or Important Wildlife Areas in India

Tiger Reserve and Elephant Reserves
National Parks and Wildlife Sanctuaries
Biosphere Reserves
Critical habitats for threatened, rare, or, restricted range species
Habitat of migratory birds
Lakes, estuaries, reservoirs, dams, streams and rivers
Tribal settlements
Coastal areas rich in corals, mangroves, breeding ground of specific species
Environmentally sensitive areas
Religious and historic places
Turtle Nesting Sites

As per the WPA 1972, for any activity (including linear projects) proposed within a protected area consultation with National Board for Wildlife (NBWL) is required before the state government accords approval. The SC (Standing Committee) of the NBWL performs this task. Cases of such activities, if any, proposed within tiger reserves also needed to be referred to NBWL through NTCA for approval under different sections of WPA, 1972. Cases referred to SC-NBWL in other regulatory mechanisms like EC (Environmental Clearance) cases located within 10 km of a national park/wildlife sanctuary are also placed before SC-NBWL in the same manner through the SBWL.

Role of NTCA in Tiger Conservation Zones:

The functions of NTCA as defined under relevant sections of the Wildlife (Protection) Act, 1972, for regulating developments in tiger conservation zones are mentioned below.

Section 38 (0) (1) (b): evaluate and assess various aspects of sustainable ecology and disallow any ecologically unsustainable land use such as mining, industry and other projects within the tiger reserves.

Section 30 (0) (1) (g): "*ensure that the tiger reserves and areas linking one protected area or tiger reserve with another protected area or tiger reserves are not diverted for ecologically unsustainable uses, except in public interest and with the approval of the National Board for Wildlife and on the advice of the NTCA."*

Section 38 V (3): "*The state government shall prepare a Tiger Conservation Plan including staff development and deployment plan for the proper management of each area referred to in sub-section (1), so as to ensure ecologically compatible land uses in the*

tiger reserve with another for addressing the livelihood concerns of local people, so as to provide dispersal habitats and corridor for spill-over population of wild animals from the designated core areas of tiger reserves or from tiger breeding habitats within other protected areas."

SCOPE OF MITIGATION MEASURES:

Mitigation must follow a hierarchy of measures.

1. First, **avoid** or **prevent** adverse impacts as far as possible by considering **spatial** or **design** alternatives. Where impacts are highly significant or could lead to loss of irreplaceable biodiversity or conservation assets, avoidance is the only real option if development is to be sustainable.
2. Second, **minimise** or **reduce adverse impacts** to 'as low as practicable levels.
3. Third, **restore** areas damaged by construction.
4. Fourth, remedy or **compensate** for adverse residual impacts which are unavoidable and cannot be reduced further.

Mitigation measures for transportation-induced impacts

These essentially fall into two categories:

1. Regulatory or prescriptive measures that are intended to alter human behaviour, and
2. Measures to manage habitat on or near the site that are intended to influence animal responses.

Measures to alter human behaviour	**Measure to alter animal responses**
Speed control	Clearing vegetation for increasing visibility along the road
Temporary road closure	Erection of animal proof fencing
Control on feedi ng of wild animals on the road	Increasing permeability of a road corridor by facilitating movement through culverts and underpasses
Regulatory guideline for laying/upgrading road through sensitive habitats	Retrofitting existing drainage culverts to facilitate wildlife crossings by animals
Prescription for width of the road	Installation of Wildlife detection system using cameras/alarms etc

Measures specifically to address habitat fragmentation effects of transportation infrastructure fall into two broad categories: **structural and non-structural**

Structural	Non-structural
Land bridge, Canopy bridge	Canopy connectivity for arboreal species like Giant/flying Squirrels and Langurs.
Glider poles, Viaducts	Habitat management
Box culverts, pipe culverts, modified culverts	Elevating linear structures
Fish passages and ladders	Corridor planting
Fences	Local traffic management

MITIGATION MEASURES SPECIFICALLY FOR TIGER LANDSCAPE:

Both underpasses and overpasses are potential solutions for mitigating the impacts of linear infrastructure in tiger landscapes (refer Fig. 1). Underpasses with a minimum span of 30 m, with a height of 5 m and a width of 5–8 m, would work for most species in tiger landscapes. This span needs to be a minimum of 50 m, with the same dimensions of width and height, if linear infrastructure is permitted in critical tiger corridors as well as core areas of tiger reserves. After accounting for structural construction requirements, the minimum passage width of an overpass should not have a steep incline to the infrastructure crossing; slopes over 25 degrees should be avoided. The length of the overpass is site-specific and needs to be adjusted to the lay of the land.

In terms of density, a passageway of over 50 m per 1 km length of infrastructure in critical tiger corridors would ensure that habitat connectivity is maintained and fragmentation is avoided. It is important that wild animal movement is channelled to the passageway for crossing the infrastructure by using appropriate funnelling

structures, either natural or artificial. Fencing off the road or railway is recommended when passing through a wildlife habitat to avoid mortality, prevent accidents, and ensure the safety of humans. Where fencing is not required or feasible, specific mitigation measures are necessary, especially in the vicinity of topographic features that tend to trap wildlife on roads or railways.

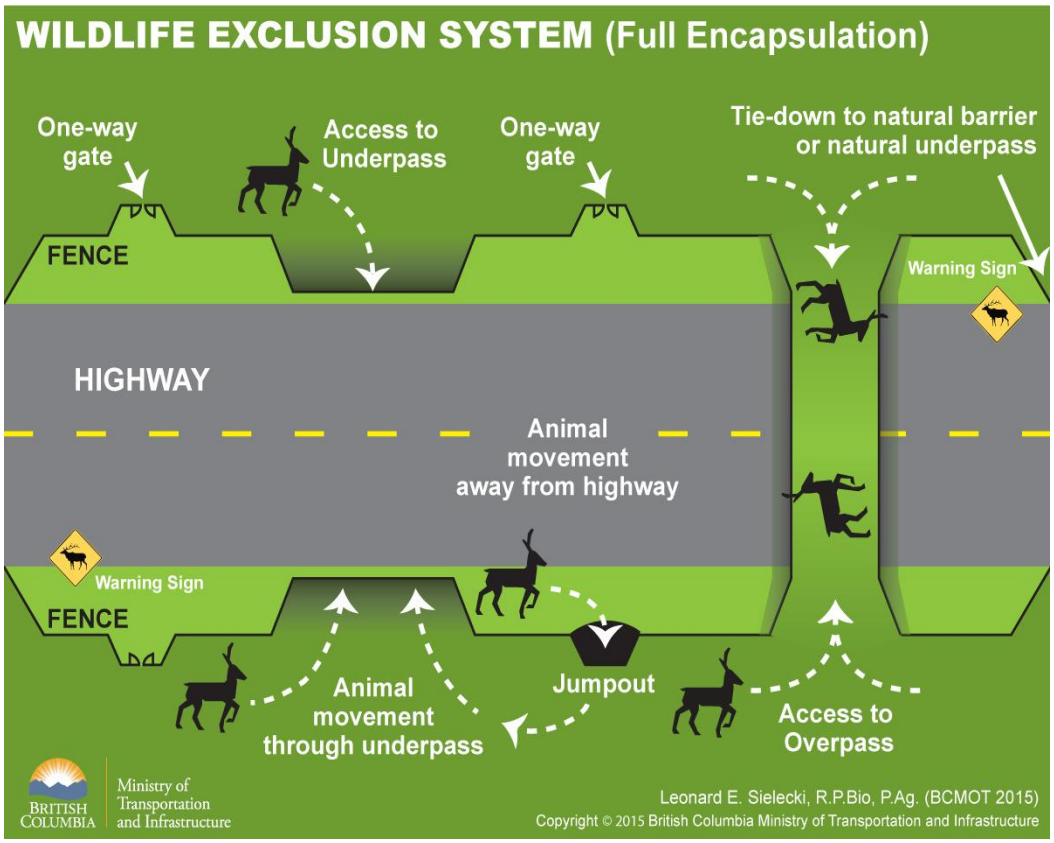


Fig. showing Wildlife Exclusions System

Visual barriers along the sides of the infrastructure need to be installed in such a manner that the traffic is not visible from a distance or up close from the wild animal crossings. Care should be taken to ensure that vehicular lights do not escape the visual barrier at night, as these visual cues could deter nocturnal species from using the underpass. Visual barriers can be camouflaged and enhanced by planting tall vegetation along the edges of the engineered structure.

Both underpasses and overpasses need to be fortified with sound barriers to prevent any disturbance to wildlife that could potentially use these structures for passage across the infrastructure. The installation of appropriate sound and visual barriers cannot be overemphasised; without them, the investments in constructing underpasses and overpasses can go to waste, as wildlife may never use them.

Olfaction and other sensory enhancers:

Target wild animals can be encouraged to use the overpass or underpass by enhancing its porosity to wildlife through enrichment.

These enrichments consist of:

a) Use of appropriate substrates like soil, leaf litter, gravel, and herbaceous vegetation.

b) Attractants like food plants, carrion, pheromones, dung of conspecifics, and scats in the case of carnivores like tigers. These enrichments require inputs from professional wildlife biologists and, if not appropriately used, can also act as deterrents to wildlife passage.

Annexure – III

Beat Wise Area Statement in Corridor

Circle	Division	Range	Section	Beat	Compartment No.	Area (Ha)	Area (Sq km)
Project Tiger	Nandyal	Rudravaram	Ahobilam	Ahobilam_North	10	3514.00	35.14
				Ahobilam_South	9	3036.00	30.36
			Alamur	Bachepalli	5	2111.00	21.11
				Utla	5	1909.00	19.09
				Mittapalli	10	3004.00	30.04
			D V Penta	Peddavangli	14	4537.00	45.37
				D V Penta	9	3255.00	32.55
				Muthyalapaduthanda	13	3486.00	34.86
			Nuthala	Nuthala_South	8	2552.00	25.52
	Giddalur	Giddalur	Sanjivaraopeta	Uyyalawada	2	609.00	6.09
				Bodi	1	308.00	3.08
		Bestavaripeta	Allinagaram	Allinagaram	17	7114.00	71.14
				Gunthapalli			
			C S Puram	Mundlapadu	20	9136.00	91.36
				Thungodu			
			Chinthalapalli	Chinthalapalli	4	2103.00	21.03
			Chinthapalli	Singasanipalli	16	6181.00	61.81
			Janapalacheruvu	Chinnaobinenipalli	16	7657.00	76.57
				Janapalacheruvu			
			Taticherla	Nallaguntla	8	3167.00	31.67

				Taticherla			
				Sub-total	**167**	**63679.00**	**636.79**
Kurnool	YSR Kadapa	Badvel	Bramhanpalli	Boyanapalli	13	5576.00	55.76
				Brahmanapalli (K)	1	688.00	6.88
				Ganugapenta	11	4496.00	44.96
				Ramapuram	7	2541.00	25.41
				Valleruvaripalli	7	2987.00	29.87
			Vothimadugu	Gangireddipalli	5	2188.00	21.88
				Jangamrajupalli	8	2760.00	27.60
		Cuddapah	Bhakarapet	Bhakarapet	6	3028.00	30.28
				Dasarladoddi	10	5397.00	53.97
				K G Penta	5	2165.00	21.65
				Kanumalopalli	8	3276.00	32.76
			Maddimadugu	Maddimadgu_East	10	4776.00	47.76
			Mamillapalli	Ippapenta	7	2798.00	27.98
				Mamillapalli	15	6484.00	64.84
				Pullalamadugu	8	2809.00	28.09
		Onipenta	Ganjikunta	Balappabhavi East	17	3750.17	37.50
				Balappabhavi West	1	3799.22	37.99
				Ganjikunta	8	3848.26	38.48
				Kothapalli	5	3897.30	38.97
				Neelampuram	8	3946.35	39.46
				Thippireddipally	1	3995.39	39.95
			Onipenta	Gangayapalli	1	4044.44	40.44
				Maddivaripalli	5	4093.48	40.93

				Mudireddipally	11	4142.53	41.43
		Porumamilla	Mallepalli	Mallepalli	9	4191.57	41.92
				Savisettipalli	7	4240.61	42.41
				Siddavaram	6	4289.66	42.90
				Tekurupet	8	4338.70	43.39
				Venkatapuram (K)	12	4387.75	43.88
			Thamballapalli	Balayapalli	10	4436.79	44.37
				Jyothi	11	4485.83	44.86
				Kalasapadu	4	4534.88	45.35
				Peddabhavi	14	4583.92	45.84
				Thaduku	11	4632.97	46.33
		Vontimitta	Vontimitta	Chintarajupalli	12	4682.01	46.82
				Mantapampalli	3	4731.05	47.31
				Nadimpally	5	4780.10	47.80
				Sub-total	**290**	**145801.98**	**1458.02**
Tirupati	Annamayya	Chitvel	Chitvel	Chitvel	16	4829.14	48.29
				Salivendula	9	4878.19	48.78
			R V Palli	R V Palli	13	4927.23	49.27
				Venkatarajupalli	16	4976.27	49.76
		Kodur	Balapalli	Balapalli East	13	5025.32	50.25
				Chiyyavaram	10	5074.36	50.74
			Gadela	Gadela	9	5123.41	51.23
				M Bhavi	8	5172.45	51.72
				N G Penta	6	5221.50	52.21
				Ummethala	5	5270.54	52.71

			K V Bhavi	K V Bhavi North	12	5319.58	53.20
				K V Bhavi South	6	5368.63	53.69
				K V Bhavi West	4	5417.67	54.18
		Rajampet	B D Bavi	Annasamudram	5	5466.72	54.67
				B D Bhavi North	6	5515.76	55.16
				B D Bhavi South	6	5564.80	55.65
				Nandaluru	3	5613.85	56.14
				Patur	6	5662.89	56.63
			S R Palem	Rollamadugu Central	5	5711.94	57.12
				Renuthala	11	5760.98	57.61
				Rollamadugu East	4	5810.02	58.10
				Rollamadugu West	6	5859.07	58.59
				S R Palem	17	5908.11	59.08
			T Bylu	Arimanipenta	9	5957.16	59.57
				Vathalur	11	6006.20	60.06
				C C Kunta	11	6055.25	60.55
				T. Bylu	14	6104.29	61.04
		Rayachoti	Guvvala Cheruvu	Guvvalacheruvu East	10	6153.33	61.53
			Vongimalla	Gadikota	19	6202.38	62.02
				Korthimadugu	21	6251.42	62.51
				Saraswathipalli	14	6300.47	63.00
		Sanipaya	Pincha	Dinnela	8	6349.51	63.50
				Jillelamanda	10	6398.55	63.99
				Mudumpadu	8	6447.60	64.48

			Rayavaram	T Sundupalli	6	6496.64	64.97
				Vanarachapalli	11	6545.69	65.46
			Sanipaya	Jandrapenta	9	6594.73	65.95
				Sanipaya	12	6643.77	66.44
				Veeraballi	10	6692.82	66.93
		Balapalli	Balapalli	Balapalli West	1	6741.86	67.42
	Tirupati	Bhakarapet	Ellamanda	Talakona North	3	6790.91	67.91
		Srikalahasti	Chinthalapalem	Chinthalapalem	2	6839.95	68.40
				Kuntipudi	3	6888.99	68.89
			Pallam	Kalavagunta	5	6938.04	69.38
				Mannavaram	6	6987.08	69.87
				Melachur	5	7036.13	70.36
		Tirupati	Krishnapuram (T)	Krishnapuram	8	7085.17	70.85
				Yerpedu	4	7134.22	71.34
			Mamandur	Napier North	5	7183.26	71.83
				Napier South	5	7232.30	72.32
		Venkatagiri	Dakkili North	Devulapalle	5	7281.35	72.81
				Vembuluru	5	7330.39	73.30
				Alturpadu	9	7379.44	73.79
				Theerthampadu	2	7428.48	74.28
			Venkatagiri	Dacheruvu	1	7477.52	74.78
				Kurjagunta	1	7526.57	75.27
				Palemkota	2	7575.61	75.76
				Sub-total	**451**	**353535.51**	**3535.36**
	Palnadu	Macherla	Durgi	Adigoppula	9	9255.00	92.55

Guntur				Minchalapadu			
			Veldurthi	Loyapalli	6	7690.00	76.90
				Mutukuru			
		Vinukonda	Ipuru	Chejerla	8	12539.00	125.39
			Mellavagu	Jayanthipuram	5	3022.00	30.22
				Karempudi			
				Mellavagu			
			Naidupalem	Kandrika	9	5423.00	54.23
				Kanumulachervu			
				Naidupalem			
			Bollapalli	Bollapalli	18	26511.00	265.11
				Domalagudem			
				Ravulapuram			
				Remidicherla			
	Prakasam	Kanigiri	Ambavaram	Ambavaram	9	3983.00	39.83
			Dersiguntapeta	Bonthavaripalli	18	7758.00	77.58
				Chennapanaunipalli			
			Gudipatipalli	Gudipatipalli	59	28448.00	284.48
				Tadivaripalli			
				Vedullacheruvu			
			Kanigiri	Nagireddipalli	2	677.00	6.77
	SPSR Nellore	Atmakur	Bata	Brahmanapalli	10	4933.00	49.33
			K N Palli	K N Palli North	16	9643.00	96.43
				K N Palli South			
				Singanapalli			

			Krishnapuram	Bata	4	3209.00	32.09
				Venkatapuram (N)			
			Marripadu	Rajupalem	4	2261.00	22.61
		Udaygiri	Sitarampuram	Chinnanagampalle	24	12430.00	124.30
				Devammacheruvu	1	173.00	1.73
				Pandrangi			
				Sitatampuram			
			Udayagiri	Duttalur	59	22617.00	226.17
				Kottapalli			
				Nandipadu			
				Sekunalapalli			
				Udayagiri East			
				Udayagiri West			
			Krishnampalli	Arlapadia	16	7043.00	70.43
		Rapur	Rapur	Rapur	2	823.00	8.23
Sub-total					**279**	**168438.00**	**1684.38**
Total					**1187**	**731454.49**	**7314.54**

Annexure – IV

DECLARATION OF CERTAIN AREAS IN CUDDAPAH DISTRICT FOR Sri LANKAMALLESWARA WILD LIFE SANCTUARY UNDER SECTION 26-A, WILD LIFE (P) ACT, 1972.

[G. O. Ms. No. 97, Environment, Forests, Science and Technology (For.-III), 17th July, 1998.]

In exercise of the powers conferred by Sub-Section (1) of Section 26-A of the Wild Life (Protection) Act, 1972 (Central Act 53 of 1972), the Government of Andhra Pradesh hereby declares the area specified in the Schedule below as shown in the map kept in the Office of the Prl. Chief Conservator of Forests, Andhra Pradesh, Hyderabad as a Wild Life Sanctuary which shall be called as "SRI LANKA MALLESWARA WILD LIFE SANCTUARY".

2. This Notification shall come into force with effect from the date of publication of the Notification in the Andhra Pradesh Gazette.

THE SCHEDULE

Name of the District	: Cuddapah
Name of the Mandals	: (1) Cuddapah (2) Badvel (3) Siddavatam
Name of the Forest Division	: (1) Cuddapah (2) Proddatur
Name of the Ranges	: (1) Siddavatam (2) Badvel (3) Proddatur
Name of the Wild Life Division	: Deputy Conservator of Forests, Sri Venkateswara National Park, Tirupathi.
Name of the Sanctuary	: Sri Lankamalleswara Wild Life Sanctuary
Area of the Sanctuary	: 46,442.62 Ha. or 464.42 Sq. Kms.

AREA STATEMENT

Sl. No.	Name of the District.	Name of the Division.	Name of the Range	Name of the Forest Block.	Total area of the Forest Block (in Ha)	Area included in the Sanctuary (in Ha)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Cuddapah.	Cuddapah.	Siddavatam.	Lankamalai R.F. (Part)	14964.37	14963.37
				Lankamalai Ext. R.F. (Part)	11429.38	11429.38

(1)	(2)	(3)	(4)	(5)	(6)	(7)
2.	Cuddapah.	Proddatur.	Badvel.	Lankamalai R.F. (Part)	6320.00	6320.00
				Lankamalai Ext. R.F. (Part)	3466.00	3466.00
			Proddatur.	Lankamalai R.F. and Lankamalai Ext. R.F.	9689.07	9689.07
				Chennamukka-palli R.F.	575.00	575.00
					46442.82	46442.82
				Total:	464.42 Sq. Kms.	

BOUNDARY DESCRIPTION

The boundaries of the Sanctuary as delineated in the map kept in the Office of the Prl. Chief Conservator of Forests, A.P. Hyderabad are as follows:

NORTH (A To B): The Boundary of the Sanctuary starts from Station 'A' which is marked on the map and which is a meeting point of the Reserve Forest line with the bifurcation point of Badvel metal road to Mydukuru and Khajipeta (which is permanent feature from where the Sanctuary boundary starts). The line then runs along the boundary line and incidentally all along with road to Badvel in the Eastern direction till it meets the point 'B'.

EAST (B To C): From point (B), the Sanctuary boundary runs all along the external boundary line of Lankamalai Extension Reserve Forest, in the Southern direction till it meets points 'C' which is the crossing point of Lankamalai Extension Reserve Forest boundary line and the public works Department Road from Badvel to Siddavatam.

SOUTH (C To D): From point 'c' the Sanctuary boundary run all along the external boundary line of Lankamalai Extension Reserve Forest in the South Eastern, Southern and Western direction till it meets Public Works Department Road from Badvel to Siddavatam, which is the point 'D' as shown in the map.

WEST (D To A): From point 'D' the Sanctuary boundary runs all along the external boundary line of Lankamalai Extension Reserve Forest in the North Western direction in a Zig-Zag manner till it meets point 'D' which is the south-western corner of Chennamukkapalli Reserve Forest (as shown in the map) then follows external boundary line Chennamukkapalli Reserve Forest and Lankamalai Reserve Forest in a North-Western, North - Eastern and Northern direction in a Zig Zag manner till it meets point 'A'.

All the enclosures within the Reserve Forest and Villages, private lands covered in the above specified limits shall stand included for the purpose of this notification. The Conservator of Forests, Kurnool who is authorised to perform the functions of the District Collector vide G.O.Ms.No. 39 EFS&T (For.III) Dept. Dated: 17-4-1997 has determined the existence, the Nature and the extent of the rights of the persons in the Sri Lankamalleswara Wild Life Sanctuary vide his Proc. No. 10344/97/M-5, Dated: 23-5-98 as follows:

"The local communities are entitled to the rights and concession as admitted at the time of settlement of Forest Blocks".

DECLARATION OF CERTAIN AREAS IN KURNOOL DISTRICT IN "ROLLAPADU WILD LIFE SANCTUARY" UNDER SECTION 26-A OF WILD LIFE (P) ACT, 1972.

[G.O.Ms.No. 98, Environment, Forests, Science & Technology (FOR.III), 17th July, 1998.]

In exercise of the powers conferred by Section 26-A of the Wild Life (Protection) Act, 1972 (Central Act 53 of 1972), the Governor of Andhra Pradesh hereby declares the areas specified in the Schedule below as show in the map kept in the Office of the Prl. Chief Coservator of Forests, Andhra Pradesh, Hyderabad as a Wild Life Sanctuary which shall be called as "ROLLAPADU WILD LIFE SANCTUARY".

This notification shall come into force with effect from the date of publication of this notification in the Andhra Pradesh Gazette.

THE SCHEDULE

Name of the District	:	Kurnool.
Name of the Mandal	:	Midthur.
Name of the Wild Life Division	:	Assistant Director, (Project Tiger) Atmakur.
Name of the Sanctuary	:	Rollapadu Wild Life Sanctuary.
Area of the Sanctuary	:	1517.66 Acres or 614.19 Ha.

BOUNDARY DISCRIPTION

NORTH (A To E): The Sanctuary boundary starts at station (A) on the North-West side, which is a permanent mark on the ground (Masonry Piller with Sanctuary mark). Thence it runs along the Northern boundaries of Survey Numbers, 280/A, 280/B, 289/A, 289/B upto Station (B) and thence along the Western boundaries of 294, 295 and thence along North - West and Northern boundary of Survey No. 295. Thence crossing the Rollapadu to Cherukucherla cart tract to the Northern boundary of Survey Nos. 313, 314A, 318 upto Station (C). Thence the bondary follows the Western boundary of Survey No. 330/A, 330/B, 331, 332, 211/B, 211/A, 210/C, 210/B, 210/A upto Station (D). Thence the boundary follows the Northern boundary of Survey Numbers 210/A, 209, 188/B, and the Western boundary of Survey No. 189 and thence the Northern and Eastern boundaries of Survey No. 198 thence along the general Northern Boundary of Survey No. 184/A, the Western boundary of Survey Numbers 179/B, 176, 175 and thence the Northern boundary of Survey Numbers 174, 173, 172, 171/B, 171/A, 158, 157/B, 157/A, 147 and 146 upto Station (E).

EAST (from Station E to F: From Station E on the North-East corner the Sanctuary Boundary follows the Eastern boundary of the Survey No. 146, 145, 144, 143, 142/C, 142/B, 142/A, 138/C, 138/B, 138/A and 135 which is the common village Boundary of Rollapadu and Alaganur villages, upto Station (F).

SOUTH (from Station F to L: From Station 'F' on the South-Eastern corner of the Sanctuary, the Boundary follows the Southern Boundaries of Survey Numbers 135, 136/A, 136/B and 131 upto Station (G). Thence it follows the western boundary of Sy.No. 131 also the right bank of Mogili vagu upto Station (M), thence along the Southern Boundary of Survey No. 130, thence along the Southern Boundary of Survey Nos. 128/A, 128/B and thence along the Southern Boundary of Survey Numbers 128/B, 128/C, 107, 108, 99, 110 and 363, crossing the Rollapadu - Parumanchala track, thence along the Western Boundary of Survey No. 326 the Southern boundary of 360/B, 342 thence along

the Western Boundary of 342, 343, thence along the Southern boundary of 345, 346/A, 346/B upto station (I). Thence along the Southern Boundary of Survey Numbers 336, 329 thence along the Eastern boundary of 320, thence along the Southern Boundary of 321, 322 and 294 upto station (J). Thence the boundary runs along the Eastern Boundary of 290/A, 291, 443, thence crossing the Nandikotkur Nandyal Road, thence along the Eastern Boundary of Survey Numbers. 449/B, 449/A, 452/A, 452/B. 452/C, 459/B upto station (K). Thence along the Southern boundary of Survey Numbers 459/B, 459/A, 458, 454, Eastern Boundary of Survey Numbers 472, 471, the Southern Boundary of Survey Nos. 471, 487, 486, 485 and 484 upto Station (L) (a permanent masonry pillar on ground).

From Station (L) the Sanctuary Boundary follows the Western Boundary of Survey Nos. 484, 483, 482, 481, 479, 478, 477, 476, 284, 283, 281/B, 281/A, 280/A upto Station (A). This is also the common village boundary of Rollapadu - Junkesula and Rollapadu - Cherukucherla villages.

For the purpose of Wild Life Sanctuary, all the lands within the above description shall be enclosed in the Sanctuary.

The Conservator of Forests, Kurnool who is authorised to perform the functions of the District Collector vide G.O.Ms.No. 39 EFS&T (For.III) Department, Dated: 17-4-1997 has determined the existance, the Nature and the extent of the rights of the persons in the Rollapadu Wild Life Sanctuary vide his proceedings No. 10344/93-M2, Dated: 23-3-1998 as follows:

(1) Rights to use cart track from Perumanchala to Sanjeevarayudu temple (in South direction of the temple to north direction.)

(2) Rights to use cart track along North boundary of Rollapadu Wild Life Sanctuary and from Sanjeevarayudu temple to Alaganur (village).

(3) Right to use cart track from Rollapadu to Cherukucherla (V).

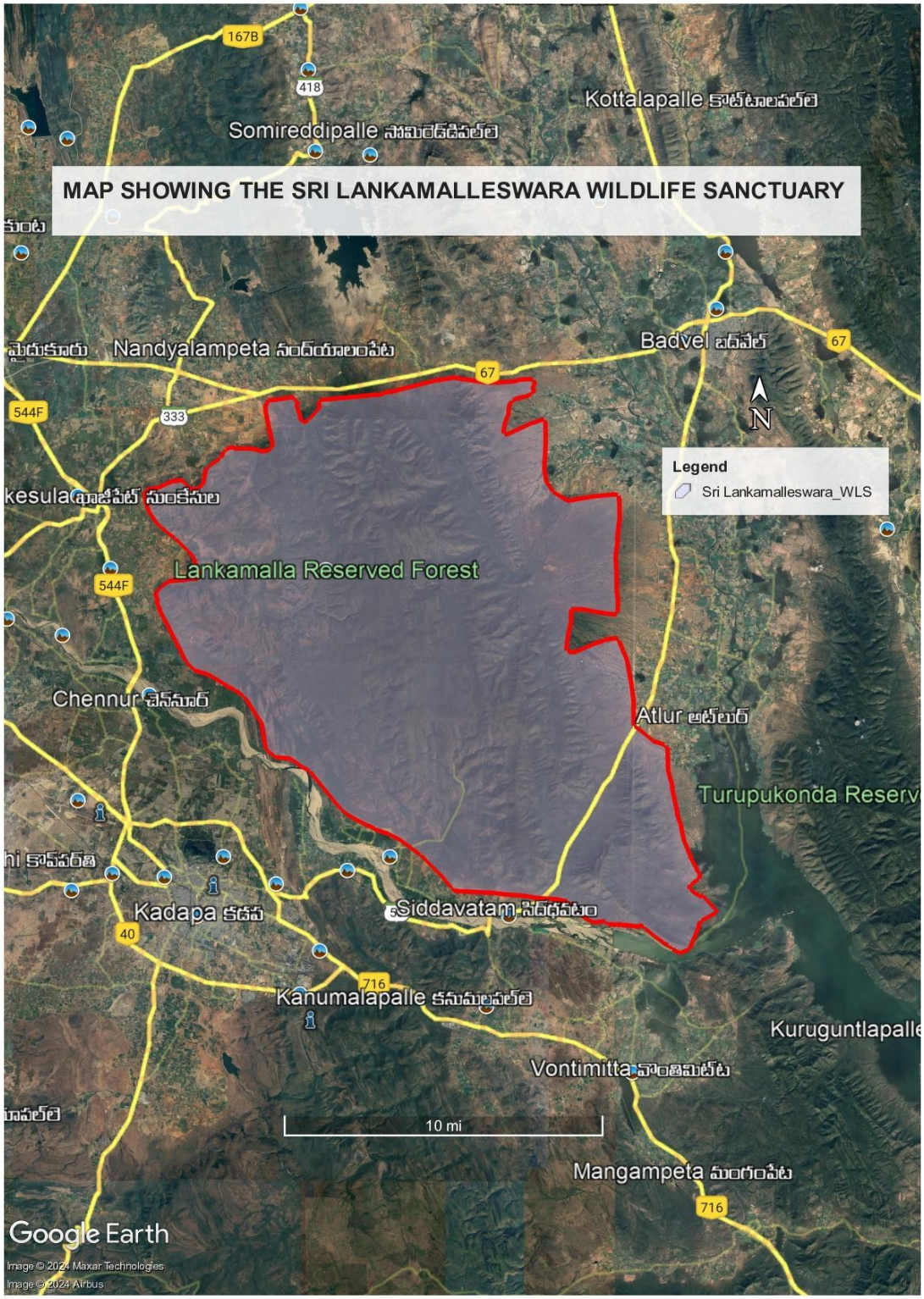
(4) Right to use Road from Nandikotkur to Nandyal.

(5) Right to use flow of water from Rollapadu cart track to Perumanchala (Village).

The Survey Number wise area included in the Wild Life Sanctuary are appended in the Annexure.

C. S. RANGA CHARI,
Special Chief Secretary to Government.

Map 30. Map showing the Sri Lankamalleswara Wildlife Sanctuary



Compartment wise areas falling in Sri Lankamalleswara Wildlife Sanctuary in YSR (T) Division, Kadapa

Area of the notified Wildlife : 46442.82 ha (or) 464.42 Sq.Km						
Sl. No	**Range**	**Section**	**Beat**	**Name of the Forest Block**	**Compartments-wise area of the WL Sanctuary**	
					No of Compartments	**Area (in Ha)**
1	Sidhout	Kondur	Kondur	Lankamalai Extn RF	376	475.00
				Lankamalai Extn RF	377	575.00
				Lankamalai Extn RF	378	500.00
				Lankamalai R.F.	379	625.00
				Lankamalai R.F.	380	525.00
				Lankamalai R.F.	381	275.00
				Lankamalai R.F.	422	350.00
				Lankamalai R.F.	423	400.00
				Lankamalai R.F.	424	400.00
				Lankamalai R.F.	425	400.00
				Lankamalai R.F.	426	425.00
				Lankamalai R.F.	427	450.00
				Lankamalai R.F.	428	350.00
				Yerraballi CA Block	1171	0
				Kondur Tope	375	0
					Beat Total:	**5750.00**
			Maddur	Lankamalai Extn RF	382	650.00
				Lankamalai Extn RF	383	475.00
				Lankamalai Extn RF	384	575.00

				Lankamalai Extn RF	385	475.00
				Lankamalai Extn RF	386	500.00
				Lankamalai Extn RF	387	375.00
				Lankamalai Extn RF	388	500.00
				Lankamalai Extn RF	389	500.00
				Lankamalai Extn RF	390	500.00
				Lankamalai Extn RF	391	300.00
				Lankamalai Extn RF	392	400.00
				Lankamalai R.F.	416	350.00
				Lankamalai R.F.	417	375.00
				Lankamalai R.F.	418	500.00
				Lankamalai R.F.	419	500.00
				Lankamalai R.F.	420	350.00
				Lankamalai R.F.	421	375.00
					Beat Total	**7700.00**
					Section Total	**13450.00**
1	Sidhout	Gollapalle	Sidhout	Lankamalai Extn RF	393	425.00
				Lankamalai Extn RF	394	275.00
				Lankamalai Extn RF	395	500.00
				Lankamalai Extn RF	396	500.00
				Lankamalai Extn RF	397	375.00
				Lankamalai R.F.	410	500.00
				Lankamalai R.F.	411	500.00
				Lankamalai R.F.	412	475.00
				Lankamalai R.F.	413	425.00

				Lankamalai R.F.	414	400.00
				Lankamalai R.F.	415	500.00
					Beat Total:	**4875.00**
			Gollapalle	Lankamalai Extn RF	398	317.75
				Lankamalai Extn RF	399	475.00
				Lankamalai Extn RF	400	350.00
				Lankamalai R.F.	401	475.00
				Lankamalai R.F.	402	500.00
				Lankamalai R.F.	403	375.00
				Lankamalai R.F.	404	350.00
				Lankamalai R.F.	405	500.00
				Lankamalai R.F.	406	425.00
				Lankamalai R.F.	407	500.00
				Lankamalai R.F.	408	400.00
				Lankamalai R.F.	409	500.00
					Beat Total:	**5167.75**
			Rollabodu	Lankamalai R.F	429	425.00
				Lankamalai R.F	430	350.00
				Lankamalai R.F	431	500.00
				Lankamalai R.F	432	450.00
				Lankamalai R.F	433	375.00
				Lankamalai R.F	434	500.00
				Lankamalai R.F	435	300.00
					Beat Total:	**2900.00**
					Section Total:	**12942.75**

					SIDHOUT RANGE (TOTAL):	**26392.75**
2	Proddatur	Khajipeta	Pathur	Lankamala RF	86	300.00
				Lankamala RF	87	475.00
				Lankamala RF	88	425.00
				Lankamala RF	89	600.00
				Lankamala RF	90	425.00
					Beat Total:	**2225.00**
			Bayanapalli	Chennamukkapalli RF	76	274.66
				Chennamukkapalli RF	77	300.00
				Lankamala RF	83	450.00
				Lankamala RF	84	450.00
				Lankamala RF	85	389.23
					Beat Total:	**1863.89**
			Balasingapalli	Lankamala RF	78	225.00
				Lankamala RF	79	500.00
				Lankamala RF	80	500.00
				Lankamala RF	81	572.35
				Lankamala RF	82	555.00
					Beat Total:	**2352.35**
			Nagasanipalli	Lankamala RF	91	575.00
				Lankamala RF	92	450.00
				Lankamala RF	93	525.00
				Machupalli Block	99	0
				Nagasanipalli CA block	1177	0
					Beat Total:	**1550.00**

			Jandlavaram	Lankamala RF	94	600.00
				Lankamala RF	95	450.00
				Lankamala RF	96	450.00
				Lankamala RF	97	450.00
				Lankamala RF	98	322.83
					Beat Total:	**2272.83**
					Section Total:	**10264.07**
					PRODDATUR RANGE TOTAL:	**10264.07**
3	Badvel	Vonthimadugu	Lothuvanka	Lankamala Extn. RF	267	463.00
				Lankamala Extn. RF	268	363.00
				Lankamala Extn. RF	269	388.00
				Lankamala Extn. RF	270	388.00
				Lankamala Extn. RF	271	413.00
				Lankamala Extn. RF	272	463.00
				Lankamala Extn. RF	273	388.00
				Lankamala Extn. RF	274	438.00
				Lankamala Extn. RF	275	513.00
				Lankamala Extn. RF	276	463.00
				Lankamala Extn. RF	277	488.00
				Lankamala Extn. RF	278	413.00
				Gopalapuram CA Block	290	0
					Beat Total:	**5181.00**
			Balayapalli	Lankamala Extn. RF	279	388.00
				Lankamala Extn. RF	280	488.00
				Lankamala Extn. RF	287	458.00

					Beat Total:	**1334.00**
			Reddybavi	Lankamala Extn. RF	284	301.71
				Lankamala Extn. RF	285	388.00
				Lankamala Extn. RF	288	488.00
				Lankamala Extn. RF	289	463.00
					Beat Total:	**1640.71**
			Kothacheruvu	Lankamala Extn. RF	281	438.00
				Lankamala Extn. RF	282	363.00
				Lankamala Extn. RF	283	466.29
				Lankamala Extn. RF	286	363.00
					Beat Total:	**1630.29**
	Badvel	Vothimadugu	Jangamrajupalli	Kancherlamoram Extn. RF	265	0
				Kancherlamoram Extn. RF	266	0
					Beat Total:	**0.00**
					Section Total:	**9786.00**
					BADVEL RANGE TOTAL:	**9786.00**
	Onipenta	Onipenta	Gangayapalli	Kancherlamoram RF	156	0
					Beat Total:	**0.00**
					Onipenta RANGE TOTAL:	**0.00**
					GRAND TOTAL	**46442.82**

Annexure – V

Registered No. HSE/49. [Price : 0-40 Paise.

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THE ANDHRA PRADESH GAZETTE

PART I-EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 356] HYDERABAD, SATURDAY, OCTOBER 4, 1997

NOTIFICATIONS BY GOVERNMENT

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ENVIRONMENT FORESTS SCIENCE & TECHNOLOGY DEPARTMENT
(For III)

DECLARATION OF PENUSULA NARASIMHA WILD LIFE SANCTUARY IN NELLORE AND CUDDAPAH DISTRICTS UNDER SECTION 18 OF WILDLIFE (PROTECTION) ACT, 1972.

[G.O. Ms. No. 106, Environment, Forests, Science and Technology (For. III), 15th September, 1997.]

In exercise of the powers conferred by section 18 of the Wild Life (Protection) Act, 1972, (Central Act No.53 of 1972), the Government of Andhra Pradesh, hereby declares the areas as described in the schedule below, (as shown) in the map kept in the Office of the Principal Chief Conservator of Forests, Andhra Pradesh, Hyderabad as a Wild Life Sanctuary, which may be called as "Sri Penusila Narasimha Wild Life Sanctuary".

SCHEDULE

1.	Name of the Districts	: Cuddapah and Nellore.
2.	Names of the Revenue Mandals	: Gopavaram, Atluru, Penagaluru, Chitvel, Kaluvaya, Anata Sagaram and Rapur.
3.	Name of the Forest Division	: Nellore, Rajampet, Cuddapah and Proddatur
4.	Names of the Forests Ranges	: Siddavatam, Badvel, Vontimitta, Chitvel, Rapur and Atmakur.
5.	Names of the proposed Wild Life Divisions.	: Wild Life Management Division, Nellore.
6.	Name of the proposed Sanctuary.	: Sri Penusula Narasimha Wild Life Sanctuary

[1]

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7. Approximate area of the proposed Sanctuary. : 1030.85 KM^2

8. Name of the Enclosures inside the Sanctuary. : Lord Penusula Narasimha Swamy Temple area 200 acres, is the only enclosure inside the Sanctuary.

BOUNDARY DESCRIPTION:

1. NORTHERN BOUNDARY:
(From point "A" to "G")

The boundary line starts from point "A", where the Siddavatam to Badvel Road crosses the Lankamalla Extn. R.F. boundary and runs all along the Lankamalla extension R.F. line in south-easternly direction upto point "B", where the Somasila Reservoir M.F.L. line meets the Lankamalla Extension R.F. line. Thence it proceeds all along the Somasla M.F.L. in North-easternly and then south casternly direction upto point "C", where it meets Turupukonda R.F. line. Thence the line runs all along the Turupukonda R.F. line in Northernly and then Southernly directon upto point "D", Where Somasila M.F.L. meets Turupukonda R.F. line. Thence, the line runs all along the Somasila M.F.L. in North Easternly and then south easternly directon upto the point "E", i.e., at the Podilivaripalle Village.Thence, the line runs along the cart track in North-easternly directon upto the point "F", i.e., the North-West corner of the Mallemakonda R.F. Thence, the line runs all along the Mallemakonda R.F. in North Easternly direction upto Nellore Cuddapah District boundary line and then run in north easternly and then south-easternly direction of Udayagiri-Velgonda R.F. line, upto point "G" i.e., the Somasila Dam.

2. EASTERN BOUNDARY:
(From point "G" to "J")

From the point "G" the line runs all along the eastern boundary of Rapur-Veligonda R.F. and Extension R.F. in South-easternly direction upto the point "H" where the Kandaleru M.F.L. lines meets the Rapur-Veligonda R.F. and extension R.F. line. Thence, the line runs all along the M.F.L. line of Kandaleru reservoir upto the point "I", where the Rapur-Veligonda R.F. and extension R.F. line meet the Kandaleru reservoir M.F.L. line. Thence, the boundary runs all along the Rapur-Veligonda R.F and Extension R.F. line upto the point "J", where the Rapur-Veligonda R.F. and Extension R.F. line meets the Rapur-Chitvel Tar Road.

3. SOUTHERN BOUNDARY:
(From point "J" to "K")

From the point "J", the line runs all along the road in South Westerly direction towards Chitvel upto the point "K", where the Western boundary of Salivandra extention R.F. meets the Rapur-Chitvel Road.

4. WESTERN BOUNDARY:
(From point "K" to "A")

Thence the line runs all along the Western Boundary of the Salivandra R.F. and extention R.F. line, Mallemadugu R.F. line and Kothuru R.F. line upto the point "L" which is the North-West corner of the Kothuru R.F. Thence the line runs all along the foot-path in North-Westerly direction and joins the point "M", which is the South-West corner of the Kokeletikanuma R.F. and extention R.F. Thence the line runs all along the Kokeletikanuma R.F. and extention R.F. line in North-Westerly direction upto the point "N", where the Somasila Reservoir M.F.L. meets the Kokeletikanuma R.F. and extention R.F. line. Thence the line runs all along the M.F.L. line of Somasila Reservoir line upto the point "O" where the Somasila

Reservoir M.F.L. line meets the Kanumalapalli R.F. and extention R.F. line. Thence the line runs along the western boundary of the Konarajupally R.F. and Extention R.F. upto the Point "P", where the Somasila Reservoir M.F.L. line meets the Kondarajupally R.F. line. Thence the line runs along the Somasila Reservoir M.F.L. line in North-Westerly direction upto the point "Q" where the Somasila Reservoir M.F.L. line meets the Lankamalla Extention R.F. line. Thence the line runs all along the Lankamalla Extention R.F. line upto point "R", where, Siddavatam-Badvel road, meets Lankamalla R.F. extention line. Thence the line runs all along the road upto the point "A", which is also the common boundary of the Lankamalleswara Wild Life Sanctuary and Penusula Narasimha Wild Life Sanctuary.

ANNEXURE

STATEMENT SHOWING THE AREAS OF RESERVE FORESTS AND OTHER AREAS FALLING IN THE PROPOSED PENUSULA NARASIMHA WILD LIFE SANCTUARY.

Sl. No.	Name of the the District.	Name of the Revenue Mandal.	Name of the Forests Divn.	Name of the Forest Range.	Name of Forest Block.	Total area of the Forest Block in Hq.	Area of the Block included the Sanctuary in Hq.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Cuddapah	Gopavaram	Proddatur	Badvel	1. Turupukonda and Extn.R.F.	6968.03	3438.03
					2. Mallemakonda R.F.	4406.25	4406.25
2.	Cuddapah	Atluru	Cuddapah	Siddavatam	1. Turupukonda & Extn. R.F.	6968.03	3530.00
					2. Lankamalla Extn. R.F. (Part)	11543.911	2812.50
3.	Cuddapah	Penagalur	Cuddapah	Ontimitta	1. Kokeleti-kanuma RF	1865.237	1865.237
					2. Kokeleti-kanuma Extn. RF (A)	2069.608	2069.608
					3. Kokeleti-kanuma Extn. RF (B)	2843.157	2843.157
					4. Kothuru R.F.	4447.188	4447.188
					5. Konarajupalli R.F.	3923.918	3923.918
4.	Cuddapah	Chitvel	Rajampet	Chitvel	1. Salivendra R.F.	5262.37	5262.37
					2. Salivendra Extn. RF (A)	698.57	698.57
					3. Salivendra Extn.RF(B)	1043.48	1043.48
					4. Mallemadugu R.F.	2602.20	2602.20
					5. Marlabailu Unreserve	1700.00	1700.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5.	Nellore	Kaluvaya	Nellore	Rapur	1. Vuyalapalli R.F.	2011.31	2011.31
					2. Rapur-Veligonda Extn. R.F.	20811.19	3541.03
6.	Nellore	Ananta-sagaram	Nellore	Atmakur	1. Udayagiri-Veligonda RF	4546.875	4546.875
7.	Nellore	Rapur	Nellore	Rapur	1. Rapur-Veligonda Extn. R.F.	20811-19	17270.16
					2. Kothur R.F.	473.89	473.89
8.	Cuddapah	Somasila Dam Reservoir Area and adjoining unreserve				22000.00	22000.00
9.	Nellore -	Kandaleru Dam Reservoir Area and adjoining unreserve				12600.00	12600.00
					Total Sanctuary Area		1030.85 K.M^2

C.S. RANGACHARI,
Principal Secretary to Government.

DECLARATION OF NELAPATTU SANCTUARY UNDER SECTION 26.A OF WILD LIFE (PROTECTION) ACT, 1972.

[G.O.Ms.No. 107, Environment, Forests, Science & Technology (For. III), 15th September, 1997.]

In exercise of the powers conferred by sub section (1) of section 26-A of the Wild Life (Protection) Act, 1972 (Central Act 53 of 1972), the Governor of Andhra Pradesh hereby declares the area as described in the schedule below delienated in the map kept in the office of the Principal Chief Conservator of Forests to be a Sanctuary for the Protection of birds in the area with effect from the date of publication of this Notification in the Andhra Pradesh Gazette.

(1) Name of the District : Nellore
(2) Name of the Division : Nellore
(3) Name of the Mandal : Doravarisatram
(4) Villages inside the Sanctuary : Nil
(5) Area of Nelapattu Sanctuary : 458.92 Ha.

(Tank area: 82.56 Ha. + Unreserved area: 88.22 Ha. + Part of Kallur R.F. 288.14 Ha., Total: 458.92 Ha.)

BOUNDARY OF DESCRIPTION

NORTH: The Boundary of the Bird Sanctuary starts from the North-West corner of Kallur R.F. where the South Central Railway from Madras to Calcutta interrupts Kallur R.F. boundary line and proceeds towards Easternly direction upto Nellorepalli village Yanadi Colony.

EAST : Thence the line proceeds alongwith Southern boundary of Nelapattu Tank bund and joins the Kallur R.F. boundary again thence boundary line runs along the R.F. boundary till it joins the eastern road from Nelapattu to Doravarisatram.

SCUTH: Eastern road from Nelapattu to Doravarisatram upto 61 mile stone of Railway line near levelcrossing.

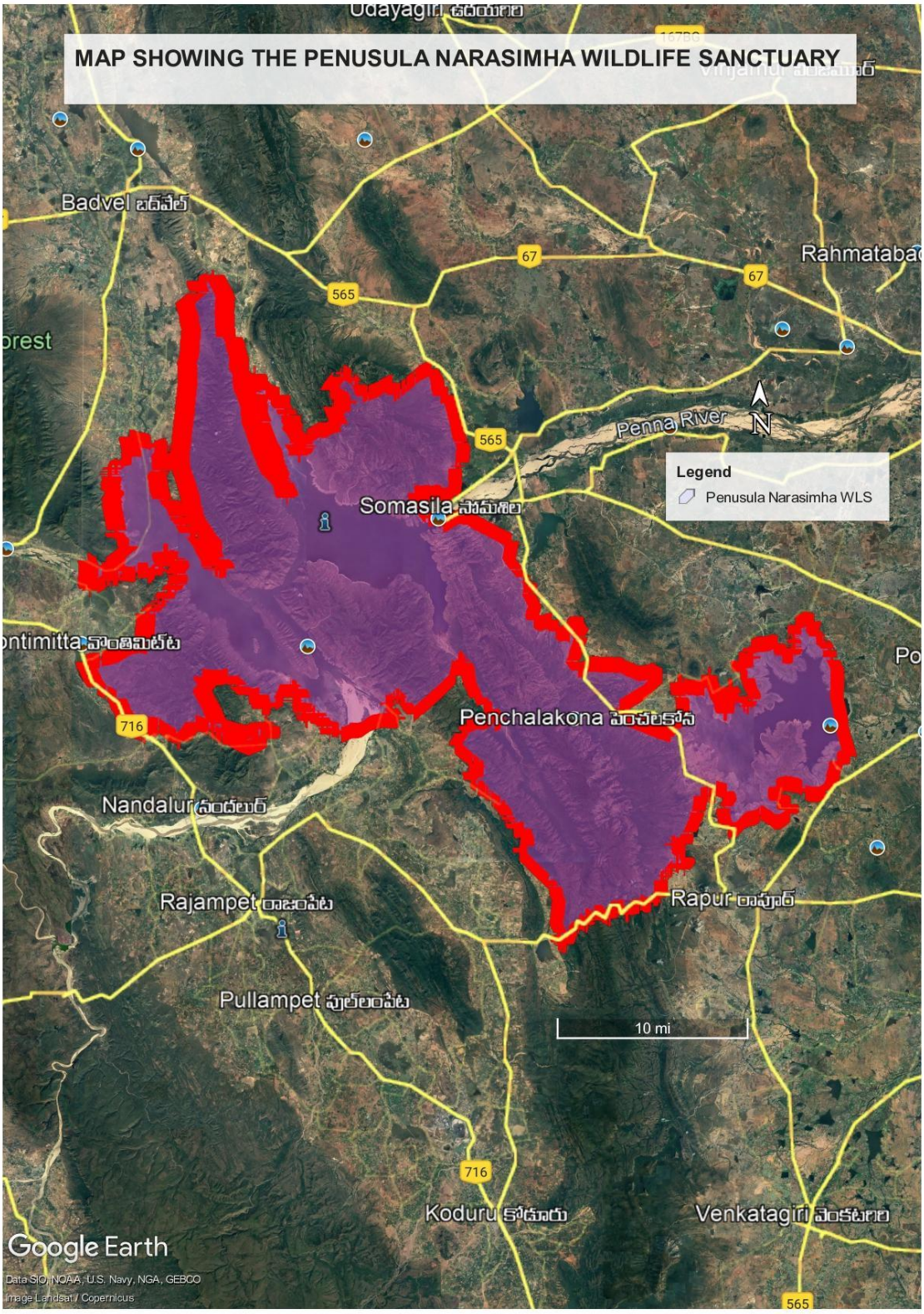
WEST : Thence the boundary line runs northerly direction along the Eastern side of Railway line and joins the North West corner of Kallur R.F. which is starting point.

The District Collector, Nellore conducted enquiry under Section 22 of the Wild Life (Protection) Act, 1972 (Central Act 53 of 1972) and ordered that the ayacut lands of the tank should be supplemented by taking up Borewells by the Wild Life Wing of the Forest Department.

C.S. RANGACHARI,
Principal Secretary to Government.

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Map 31. Map showing the Penusula Narasimha Wildlife sanctuary



Compartment wise areas falling in Sri Penusila Narasimha Wildlife Sanctuary in YSR (T) Division, Kadapa

Sl. No	Range	Section	Beat	Name of the Forest Block	Compartmentswise area of the WL Sanctuary	
					No of Compartments No.	Area (in Ha)
1	Sidhout	Kondur	Ponnapalli	Thurupukonda RF	355	400.00
				Thurupukonda RF	356	325.00
				Thurupukonda RF	357	470.00
				Thurupukonda RF	358	425.00
				Thurupukonda RF	359	475.00
				Thurupukonda RF	360	400.00
				Thurupukonda RF	361	375.00
				Thurupukonda RF	362	400.00
				Thurupukonda RF	363	250.00
				Thurupukonda Extn R.F.	364	250.00
				Thurupukonda Extn R.F.	365	250.00
					Beat Total :	**4020.00**
			Muthukuru	Thurupukonda Extn R.F.	366	270.93
				Thurupukonda Extn R.F.	367	250.00
				Thurupukonda Extn R.F.	368	250.00
				Thurupukonda Extn R.F.	369	302.00
				Thurupukonda Extn R.F.	370	250.00
				Thurupukonda Extn R.F.	371	250.00
				Thurupukonda Extn R.F.	372	200.00
				Thurupukonda Extn R.F.	373	250.50
				Thurupukonda Extn R.F.	374	300.00

					Beat Total :	**2323.43**
					Section Total :	**6343.43**
					SIDHOUT RANGE (TOTAL) :	**6343.43**
2	Vontimitta	Vontimitta	Vontimitta	Konarajupalle RF	476	635.00
				Konarajupalle RF	477	660.00
				Konarajupalle RF	478	510.00
				Konarajupalle RF	479	660.00
				Konarajupalle RF	480	798.92
				Konarajupalle RF	481	660.00
					Beat Total :	**3923.92**
					Section Total :	**3923.92**
					VONTIMITTA RANGE (TOTAL) :	**3923.92**
3	Badvel	Bramhanapalli	Bramhanapalli	Thurupukonda Extension RF	296	323.99
				Thurupukonda Extension RF	297	355.39
				Thurupukonda Extension RF	298	351.62
				Thurupukonda Extension RF	299	374.85
				Mallamkonda Addition RF	313	262.18
					Beat Total :	**1668.03**
			Obulam	Thurupukonda Extension RF	300	377.36
				Thurupukonda Extension RF	301	371.08
				Thurupukonda Extension RF	302	355.39
				Mallamkonda RF	303	350.00
				Mallamkonda RF	304	400.00
				Mallamkonda RF	305	410.00

				Mallamkonda RF	306	405.00
				Mallamkonda RF	307	419.07
				Mallamkonda RF	308	440.00
				Mallamkonda RF	309	345.00
				Mallamkonda RF	310	525.00
				Mallamkonda RF	311	475.00
				Mallamkonda RF	312	375.00
					Beat Total :	**5247.90**
			Ramapuram	Thurupukonda RF	293	323.99
				Thurupukonda RF	294	308.29
				Thurupukonda RF	295	296.06
					Beat Total :	**928.35**
					Section Total :	**7844.28**
					BADVEL RANGE TOTAL :	**7844.280**
					GRAND TOTAL :	**18111.63**

Compartment wise areas falling in Sri Penusila Narasimha Wildlife Sanctuary in Annamayya Division

Sl. No.	Range	Section	Beat	Name of R. F	Compartments No.	Areas falling in SPNWLS
1	Chitvel	R.V.Palli	Venkatarajupalli	Salivendla R.F.	1004	202.50
2				Salivendla R.F.	1005	330.00
3				Salivendla R.F.	1006	277.60
4	Chitvel	R.V.Palli	Venkatarajupalli	Salivendala Extn. A & B	1030	393.42
5	Chitvel	R.V.Palli	Venkatarajupalli	Salivendala Extn. A & B	1031	543.44
6				Nagiripadu	1090	0
7				**Total:**		**1746.96**
8	Chitvel	Chitvel	Salivendala	Salivendla R.F.	1007	0.00
9				Salivendla R.F.	1008	0.00
10				Kodur Extn. RF	1009	0.00
11				Salivendla R.F.	1010	162.46
12				Salivendla R.F.	1011	177.60
13				Salivendla R.F.	1012	152.60
14				Salivendla R.F.	1013	152.60
15				Salivendla R.F.	1014	152.60
16				Salivendla R.F.	1015	122.60
				Total		**920.46**
17	Chitvel	Chitvel	Rajukunta	Salivendla R.F.	1016	177.60
18				Salivendla R.F.	1017	152.60
19				Salivendla R.F.	1018	177.60
20	Chitvel	Chitvel	Rajukunta	Salivendla R.F.	1019	177.60
21				Salivendla R.F.	1020	277.60
22				Salivendla R.F.	1021	300.60

23				Salivendla R.F.	1022	257.60
24				Salivendla R.F.	1023	227.60
25				Salivendla R.F.	1024	227.60
26				Salivendla R.F.	1025	352.58
27	Chitvel	Chitvel	Rajukunta	Salivendala Extn. A & B	1026	302.41
28	Chitvel	Chitvel	Rajukunta	Salivendala Extn. A & B	1027	443.42
29	Chitvel	Chitvel	Rajukunta	Salivendala Extn. A & B	1028	268.42
30	Chitvel	Chitvel	Rajukunta	Salivendala Extn. A & B	1029	293.42
31				Mallemadugu R.F.	1032	222.70
32				Mallemadugu R.F.	1033	297.70
33				Mallemadugu R.F.	1034	222.70
34	Chitvel	Chitvel	Rajukunta	Mallemadugu R.F.	1035	322.70
35				Mallemadugu R.F.	1036	297.70
36				Mallemadugu R.F.	1037	272.70
37				Mallemadugu R.F.	1038	197.70
38	Chitvel	Chitvel	Rajukunta	Salivendala Extn. A & B	1039	322.83
39				Mallemadugu R.F.	1040	247.70
40				Mallemadugu R.F.	1041	197.40
41				**Total**		**6238.48**
42	Chitvel	Kondur	Kondur	Velagacheruvu Vengamamapuram	1058	226.62
43				Kothur R.F.	1059	370.00
44				Kothur R.F.	1060	445.00
45				Kothur R.F.	1061	475.00
46				Kothur R.F.	1062	425.00
47				Kothur R.F.	1063	395.08

48				Kothur R.F.	1064	395.00
49				Kothur R.F.	1065	350.00
				Marla Bylu Un-Reserve	--	1700.00
				Total		**4781.70**
50	Chitvel	Kondur	Chukkavaripalli	Kokaletikanuma R.F.	1081	323.23
51				Kokaletikanuma R.F.	1082	348.00
52				Kokaletikanuma R.F.	1083	473.00
53				Kokaletikanuma Extension 'A' R.F.	1084	298.92
54				Kokaletikanuma Extension 'A' R.F.	1085	373.92
55				Kokaletikanuma Extension 'A' R.F.	1086	398.92
56				Kokaletikanuma Extension 'A' R.F.	1087	448.72
57				Kokaletikanuma Extension 'A' R.F.	1088	548.92
				Total		**3213.63**
58	Chitvel	Kondur	Kothuru	Kothur R.F.	1066	525.00
59				Kothur R.F.	1067	411.00
60				Kothur R.F.	1068	385.00
61				Kothur R.F.	1069	350.00
62				Kokaletikanuma R.F.	1070	395.00
63	Chitvel	Kondur	Kothuru	Kokaletikanuma Extension 'B' R.F.	1071	424.00
64				Kokaletikanuma Extension 'B' R.F.	1072	324.10
65				Kokaletikanuma Extension 'B' R.F.	1073	298.92
66				Kokaletikanuma Extension 'B' R.F.	1074	274.00

67				Kokaletikanuma Extension 'B' R.F.	1075	399.10
68				Kokaletikanuma Extension 'B' R.F.	1076	399.10
69				Kokaletikanuma Extension 'B' R.F.	1077	374.10
70				Kokaletikanuma Extension 'B' R.F.	1078	349.45
71				Kokaletikanuma R.F.	1079	373.00
72				Kokaletikanuma R.F.	1080	348.00
				Total		**5629.77**
				Chitvel Range Total		**22531.00**
73	Rajampet	B.D. Bhavi	Chithalakunta	Konrajupalli Extn. RF.,	494	385.00
74				Konrajupalli Extn. RF.,	995	475.00
75				Chintalakunta RF	497	223.58
76				Chintalakunta RF	498	321.75
77				Chintalakunta RF	499	276.75
78				Chintalakunta RF	500	301.75
				Rajampet Range Total		**1983.83**
				Sanctuary Total area		**24514.83**

Annexure – VI

Sanctuary

ANNEXURE - 1

DECLARATION OF AREA OF SRI VENKATESWARA WILDLIFE SANCTUARY UNDER WILDLIFE (PROTECTION) ACT, 1972.

(G.O.Ms.No.59,Environment, Forests, Science and Technology (For.III), 13th May, 1998.)

NOTIFICATION

In exercise of the powers conferred by sub-section 26-A of the Wildlife (Protection) Act, 1972 (Central Act No.53 of 1972), the Governor of Andhra Pradesh hereby declares the areas specified in the Schedule below and as shown in the map which is kept in the office of the Prl. Chief Conservator of Forests of Forests, Andhra Pradesh, Hyderabad as a Wildlife Sanctuary, which shall be called as **"SRI VENKATESWARA WILDLIFE SANCTUARY"**

2. This notification shall come into force with effect from the date of publication of this Notification in the Andhra Pradesh Gazette.

THE SCHEDULE

Name of Districts	....	Cuddapah and Chittoor
Name of the Forest Divisions	....	(1) Rajampet (2) Chittoor East
Name of the Mandal	....	(1) Rajampet (2) Chandragiri and (3) Vayalpadu
Name of the Forest Range	....	(1) Kodur (2) Rajampet (3) Tirupati and (4) Bhakarapet
Name of proposed Sanctuary	....	SRI VENKATESWARA WILDLIFE SANCTUARY
Area of the sanctuary	....	52.597 Hectares (or) 525.97 Sq.Kms as per the details in the Annexure.

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AREA STATEMENT

Sl. No.	Name of the District	Name of the Taluk	Name of the Division	Name of the Range	Name of the Forest Block	Total area of Forest Block	Are included in the Sanctuary
1	2	3	4	5	6	7	8
1.	Cuddapah	Rajampet	Rajampet	Kodur Rajampet	Seshachalam (P) R.F. Seshachalam Extn. (Part)	26846.00	24166.00
2.	Chittoor	Chandra-giri	Chittoor East Division	Tirupati	Chamala R.F.	7746.63	7746.63
		-do-	-do-	-do-	Chamala Tirupati Hill R.F.	7508.00	7508.00
		-do-	-do-	-do-	Tirupati Extension 'A' (Part)	1656.00	828.00
		-do-	-do-	-do-	Tirupati Extension 'B' (Part)	727.00	650.00
		-do-	-do-	-do-	Mamandur Extension	4164.00	4164.00
		-do-	-do-	-do-	Mamandur (Part)	712.00	360.00
		-do-	-do-	-do-	Karakambadi R.F.	2990.00	1490.00
		Vayal-padu	-do-	Bhakara-pet	Nagapatla	7575.70	3782.00
		Vayal-padu	-do-	-do-	Talakona	7615.98	1902.37
				Total:		67541.31 Hectares (OR) 675.413 Sq.Kms	52597.00 Hectares (OR) 525.97 Sq.Kms.

BOUNDARIES OF THE SANCTUARY

The boundaries of the Sanctuary as delineated in the map kept in the office of the Chief Conservator of Forests and Chief Wildlife Warden, Andhra Pradesh, Hyderabad are as follows:

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Vijay Babu

North 'A' to 'B': The Boundary of the Sanctuary starts from Gundampenta Rest House Building which is shown as 'A' on the map. The line generally runs North-Eastern direction along Northern escarpment of the Patravanisela (stream) up to Gundala Yeru (stream). Then it follows Musti Yeru running southernly direction upto a point near Pullaguripenta Forest Resh House, which is marked as 'A1' on the map. Then it runs eastwards upto a point where in the cart track from settigunta meets the Reserve Forests line which is shown as 'B' on the map.

East 'B' to 'C' : From point 'B', the Sanctuary boundary runs along the Eastern boundary of Seshachalam Extension reserve Forest and Seshachalam Reserve Forest boundary excluding the enclosures Balapally and then follows Mamandur Extension Reserve Forests and then Mamandur Reserve Forest line excluding Mamandur village enclosure and then runs due South in straight line 184 degrees through Mamandur Reserve Forest and also outside till it meets point 'C' South East corner of Tirupati Reserve Forest as shown in the map.

South 'C' to 'D' : Thence the Sanctuary boundary runs generally Western direction cutting through Tirupathi Extension Reserve Forest and then follows the Reserve Forest boundary excluding Galigopuram area and then follows the foot hills of Tirupathi extension block upto a point (C1) (as shown in the map) and then follows to foot hills upto Kalyani Dam thence follows to inner side of the Kalyani Dam upto a point (C2) where it meets the tar road leading from Tirupathi to Bhakarapet then it meets the common boundary line of Nagapatla Reserve Forest and Bhakarapet Reserve Forest at point (D).

Point 'D' to 'A' : From point 'D' Sanctuary boundary runs generally North direction following the common boundary of Bhakarapet Reserve Forest, Nagapatla Reserve Forest and then runs along the Western boundary of Chamala R.F. upto Moramthippa. From Moramthippa due North to the junction of foot path from Chintakunta to Raikala china Kanuma, thence it goes in a due North Western direction at an angle of 315 degrees till it meets the junction of road from Nerabailu to Siddeshwaram and foot path Turakapally to Siddeshwaram. Then line follows the road to the junction of cart track from Siddeshwaram with the metalled road from until it meets the crossing of Talakona Pillavanka and the cart track from siddeshwaram to

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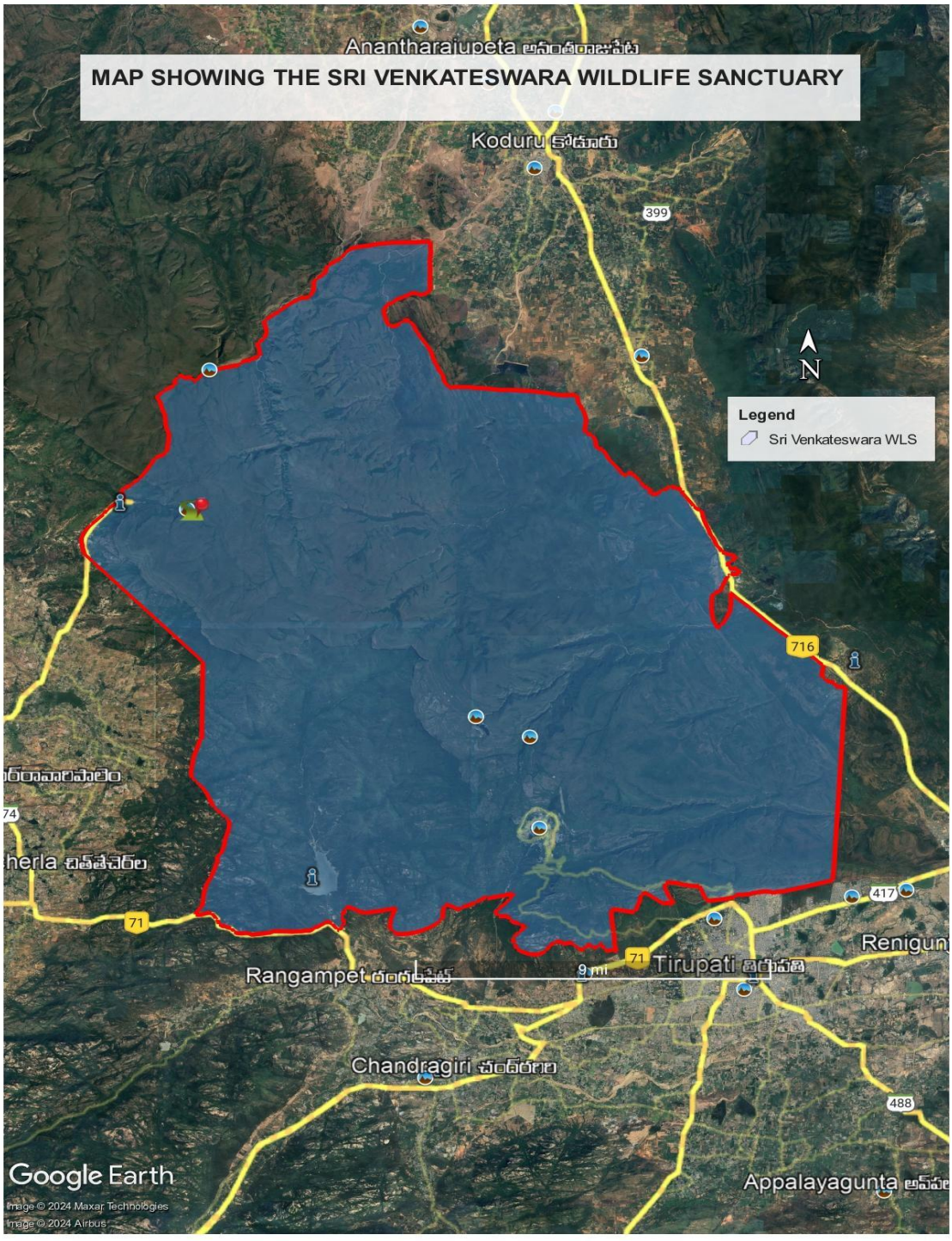
Upparpalli Reserve Forest including shoreatalura preservation plot, then the line climbs due north East cutting the escarpment and inter district boundary and meets the bridle path from Gundampenta at 24th mile, there again follows the bridle path to Point 'A'.

The Conservator of Forests (Wildlife Management Circle), Tirupati who is authorized to perform the functions of the District Collector vide G.O.Ms.No.39, EFS&T (FOR.III) DEPT., dated 17.4.1997 has determined the existence, the Nature and the extent of the persons in the Sri Venkateswara Wildlife Sanctuary vide his proceeding No.903/80/DM, dated 6.3.1998 as follows:

"The local communities are entitled to the rights and concessions ad admitted at the time of settlement of Forest Blocks".

C.S. RANGACHARI,
Special Chief Secretary to Government.

Map 32. Map showing the Sri Venkateswara Wildlife sanctuary



AREAS FALLING WITHIN SV WL SANCTUARY LIMITS

Sl. No.	BLOCK_NAME	DIVISION	RANGE	SECTION	BEAT	Compartments. NO	NAME OF THE SANCTUARY / NATIONAL PARK	AREA INSIDE SANCTUARY / NATIONAL PARK	AREA OUTSIDE SANCTUARY / NATIONAL PARK	TOTAL Compartments AREA_HA
1	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_E	60	SVWLS	600.00		600.00
2	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_E	61	SVWLS	600.00		600.00
3	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_E	62	SVWLS	575.00		575.00
4	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_E	63	SVWLS	800.00		800.00
5	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_E	64	SVWLS	900.00		900.00
6	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_E	65	SVWLS	875.00		875.00
7	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_W	66	SVWLS	815.00		815.00
8	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_W	67	SVWLS	936.00		936.00
9	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_W	68	SVWLS	410.63		410.63

10	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_W	69	SVWLS	825.00		825.00
11	Chamala RF	TIRUPATI	BHAKARAPET	CHAMALA	CHAMALA_W	70	SVWLS	410.00		410.00
12	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_E	55	SVWLS	320.00	465.00	785.00
13	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_E	56	SVWLS	200.00	735.00	935.00
14	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_E	57	SVWLS	560.00		560.00
15	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_E	58	SVWLS	322.00	288.00	610.00
16	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_E	59	SVWLS	620.00		620.00
17	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_W	50	SVWLS	625.00		625.00
18	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_W	51	SVWLS	560.00		560.00
19	Nagapatla RF	TIRUPATI	BHAKARAPET	NAGAPATLA	NAGAPATLA_W	52	SVWLS	585.00		585.00
20	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_C	31	SVWLS	207.00	198.98	405.98
21	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_C	32	SVWLS	355.00	10.00	365.00
22	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_C	33	SVWLS	280.00	95.00	375.00

23	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_C	36	SVWLS	130.00	322.00	452.00
24	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_C	37	SVWLS	90.00	265.00	355.00
25	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_S	38	SVWLS	110.00	357.00	467.00
26	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_S	39	SVWLS	175.00	287.00	462.00
27	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_S	40	SVWLS	480.00	137.00	617.00
28	Talakona RF	TIRUPATI	BHAKARAPET	NERABAILU	TALAKONA_S	41	SVWLS	75.37	261.63	337.00
29	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_N	137	SVWLS	475.00		475.00
30	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_N	138	SVWLS	324.55		324.55
31	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_N	139	SVWLS	700.00		700.00
32	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_N	140	SVWLS	475.00		475.00
33	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_N	141	SVWLS	450.00		450.00
34	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_S	135	SVWLS	300.51		300.51
35	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_S	136	SVWLS	550.00		550.00

36	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_S	142	SVWLS	325.00		325.00
37	Mamandur Extn RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_S	143	SVWLS	564.60		564.60
38	Mamandur RF	TIRUPATI	TIRUPATI	MAMANDUR	MAMANDUR_S	144	SVWLS	712.24		712.24
39	Karakambadi RF	TIRUPATI	TIRUPATI	T.N.PALEM	KARAKAMBADI	145	SVWLS	325.00		325.00
40	Karakambadi RF	TIRUPATI	TIRUPATI	T.N.PALEM	KARAKAMBADI	146	SVWLS	765.62		765.62
41	Karakambadi RF	TIRUPATI	TIRUPATI	T.N.PALEM	KARAKAMBADI	148	SVWLS	387.38	162.62	550.00
42	Tirupati Extn B	TIRUPATI	TIRUPATI	T.N.PALEM	T.N.PALEM	118		35.16	242.50	277.66
43	Tirupati Extn B	TIRUPATI	TIRUPATI	T.N.PALEM	T.N.PALEM	119		35.00	265.00	300.00
44	Tirupati Hill RF	TIRUPATI	TIRUPATI	T.N.PALEM	T.N.PALEM	120	SVWLS	312.38		312.38
45	Tirupati Hill RF	TIRUPATI	TIRUPATI	T.N.PALEM	T.N.PALEM	121	SVWLS	388.00		388.00
46	Tirupati Hill RF	TIRUPATI	TIRUPATI	T.N.PALEM	T.N.PALEM	122	SVWLS	472.00		472.00
47	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	PAPAVINASANAM	128	SVWLS	728.48		728.48
48	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	PAPAVINASANAM	129	SVWLS	562.00		562.00

49	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	PAPAVINASANAM	130	SVWLS	313.00		313.00
50	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	PAPAVINASANAM	131	SVWLS	375.00		375.00
51	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	PAPAVINASANAM	132	SVWLS	310.00		310.00
52	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	T.N. PALEM_C	133	SVWLS	750.00		750.00
53	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	T.N. PALEM_C	134	SVWLS	710.00		710.00
54	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	TIRUMALA	126	SVWLS	562.00		562.00
55	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUMALA	TIRUMALA	127	SVWLS	787.50		787.50
56	Tirupati Extn B	TIRUPATI	TIRUPATI	TIRUPATHI	ALIPIRI	117	SVWLS	150.00		150.00
57	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUPATHI	ALIPIRI	123	SVWLS	613.00		613.00
58	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUPATHI	ALIPIRI	124	SVWLS	287.00		287.00
59	Tirupati Hill RF	TIRUPATI	TIRUPATI	TIRUPATHI	ALIPIRI	125	SVWLS	338.00		338.00
60	Tirupati Extn A	TIRUPATI	TIRUPATI	TIRUPATHI	PERUMALLAPALLI	114	SVWLS	370.00	356.58	726.58
61	Tirupati Extn A	TIRUPATI	TIRUPATI	TIRUPATHI	PERUMALLAPALLI	115	SVWLS	401.58		401.58

62	Tirupati Extn A	TIRUPATI	TIRUPATI	TIRUPATHI	PERUMALLAPALLI	116	SVWLS	135.00	166.55	301.55
							Total:	**28431.00**	**4614.86**	**33045.86**

Annexure – VII

Registered No. HSE/49. [Price : 0–40 Paise.

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THE ANDHRA PRADESH GAZETTE

PART I-EXTRAORDINARY

PUBLISHED BY AUTHORITY

No. 247] HYDERABAD, FRIDAY, MAY 22, 1998.

NOTIFICATIONS BY GOVERNMENT

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ENVIRONMENT, FORESTS, SCIENCE AND TECHNOLOGY DEPARTMENT

(For. III)

DECLARATION OF AREA OF SRI VENKATESWARA NATIONAL PARK UNDER WILD LIFE (PROTECTION) ACT, 1972.

[G.O.Ms.No. 58, Environment, Forests, Science and Technology (For.III), 13th May, 1998.]

In exercise of the powers conferred by sub-section (4) of Section 35 of the Wildlife (Protection) Act, 1972 (Central Act No.53 of 1972), the Governor of Andhra Pradesh hereby declares the areas specified in the Scheduled below and as shown in the map which is kept in the Office of the Prl.Chief Conservator of Forests, Andhra Pradesh, Hyderabad as a National Park, which shall be called as "SRI VENKATESWARA NATIONAL PARK".

2. This notification shall come into force with effect from the date of publication of this Notification in the Andhra Pradesh Gazette.

THE SCHEDULE

Name of Districts ... Cuddapah and Chittoor

Name of the Forest Divisions ... (1) Rajampet
(2) Chittoor East

Name of the Mandal ... (1) Tirupathi(Urban)
(2) Chandragiri
(3) Renigunta
(4) Kodur

Name of the Forest Range ... (1) Kodur
(2) Balapalli
(3) Tirupathi

Area of the National Park ... 35362.00 Hectares (or) 353.62 Sq.Kms. as per the details in the Annexure.

AREA STATEMENT

Sl. No.	Name of the Mandal and Dist.	Name of the Forest Division	Name of the Forest Block	Total Area of Forest Block	Area included in National Park (in Ha.)
(1)	(2)	(3)	(4)	(5)	(6)
1.	Tirupathi (Urban) Chittoor Dist.	Chittoor (East) -do-	Chamal R.F.. Tirupathi Hill R.F.	7746.63 7508.00	6196.63 1332.00
			Mamandur Extn. R.F. (Part)	4164.00	1214.37
2.	Chandragiri Mandal (Chittoor Dist)	Chittoor (East)	Chamal R.F.	7746.63	1550.00
3.	Renigunta Mandal (Chittoor Dist)	Chittoor (East)	Mamandur Extn. R.F. (Part)	4164.00	1800.00
4.	Kodur Mandal (Cuddapah Dist)	Rajampet	Seshachalam R.F.(Part)& Seshachalam Extn.R.F.(Part)	26846.00	23270.00
	TOTAL				35362.00 Ha. (or) 353.62 Sq.Kms.

BOUNDARIES OF THE NATIONAL PARK

The boundaries of the National Park as delineated in the map kept in the Office of the Prl.Chief Conservator of Forests, Andhra Pradesh, Hyderabad are as follows:

North 'A' to 'B': The Bundary of the National Park starts from Gundampenta Old Rest House Building which is shown as 'A' on the map. The line generally runs North-Eastern direction along Northern escarpment of the Patravanisela (stream) upto Gundla Yeru at a distance of 20 Metres, and then follows Gundla Yeru upto a point where it meets the road leading from Kodivengamma Bhavi to Kodur and runs along the road in the eastern direction till it meets Musti Yeru (stream). Then it follows Musti Yeru running Southernly direction upto a point near Pullaguripenta Forest Rest House which is marked as 'A1' on the map. Then it runs eastwards upto a point where in the cart-tract from Settigunta meets the Reserve Forests Line which is shown as 'B' on the map.

East 'B' to 'C': From point 'B', the National Park boundary runs along the Eastern boundary of Seshachalam Extension Reserve Forest and Seshachalam Reserve Forests upto point 'B1' where it crosses Potalakona (stream) and from there runs along the foot hills of the Seshachalam Reserve Forests in the Southern direction and meets the South-Western corner of Balapalli enclosure and then runs in the Southern direction following the foot hills of the Mamandur Externsion Reserve Forests till it meets Western corner of Mamandur Reserve Forest and then follows the boundary of Mamandur Reserve Forest till it meets Karakambadi Reserve Forest line and then follows the Karambadi Reserve Forest line in the Western and Southern direction upto a point where it meets Avacherikona which is marked as point 'C' on the map.

South 'C' to 'D': From point 'C' the National Park boundary follows Avacherikona in the Western direction upto a point, which is located due South to Sheshathirtham (marked as 'C1' on the map) from this point the line runs in the Northern direction upto Seshathirtham and then upto Sithamma Thirtham, where it meets the foot-path leading to Tirumala. The line then follows this foot path upto a point where it meets the Tirumala Balapalli foot path and then follows this foot path in the North-Eastern direction till it meets the common boundary line of Mamandur Extension Reserve Forest and Tirupathi Reserve Forest and then follows this common boundary line in the Northernly direction till it meets the inter District boundary line and follows it in the Western direction till it meets the Western boundary line of Chamala Reserve Forest. The line then follows this boundary line in the Southern direction till it meets the Tirumala enclosure line and follows it upto a point where it meets the South Eastern corner of Chamala Reserve Forest and then follows the Southern boundary line of Chamala Reserve Forest in the Western direction till it meets the boundary line of Bhakarapet Reserve Forest which is marked as 'D'.

West 'D' to 'A': From point 'D' the park line follows the common boundary line of Bhakarapet Reserve Forest and Chamala Reserve Forest in the Northern direction and then follows the common boundary line of Talakona Reserve Forest and Chamala Reserve Forest till it meets the Inter District boundary line at point 'D1' and then follows this common district boundary line in the North-Western direction, excluding Talakona falls, upto a point marked as 'D2' on the map, where it meets the Sri Venkateswara Sanctuary Boundary line and from there it follows the Sanctuary Boundary line till it meets the starting point 'A'.

The Conservator of Forests (Wildlife Management), Tirupathi who is authorized to perform the functions of the District Collector vide G.O.Ms.No.39, EFS&T(FOR.III)DEPT., dated 17.4.1997 has determined the existence, the nature and the extent of the rights of the persons in the Sri Venkateswara National Park vide his Proceedings No.7023/86/DM, dated 6.3.98 as follows:

"The local communities are entitled to the rights and concessions as admitted at the time of settlement of Forest Blocks".

DECLARTION OF Area OF SRI VENKATESWARA WILD LIFE SANCTUARY UNDER WILD LIFE (PROTECTION) Act, 1972.

[G.O.Ms.No. 59, Environment, Forests, Science nd Technology (For.III), 13th May, 1998.]

NOTIFICATION

In exercise of the powers conferred by Section 26-A of the Wildlife (Protection) Act, 1972 (Central Act No.53 of 1972), the Governor of Andhra Pradesh hereby declares the areas specified in the scheduled below and as shown in the map which is kept in the Office of the Prl.Chief Conservator of Forests, Andhra Pradesh, Hyderabad as a Wild Life Sanctuary, which shall be called as "SRI VENKATESWARA WILD LIFE SANCTUARY".

2. This notification shall come into force with effect from the date of publication of this Notification in the Andhra Pradesh Gazette.

THE SCHEDULE

Name of Districts ... Cuddapah and Chittoor

Name of the Forest Divisions ... (1) Rajampet and (2) Chittoor East Divn.

Name of the Taluk ... (1) Rajampet (2) Chandragiri and (3) Vayalpadu

Name of the Forest Ranges ... (1) Kodur (2) Rajampet (3) Tirupathi and (4) Bhakarapet

Name of proposed Sanctuary ... SRI VENKATESWARA WILDLIFE SANCTUARY

Area of the Santuary ... 52.597 Hectares (or) 525.97 Sq.Kms. as per the details in the Annexure.

AREA STATEMENT

Sl. No.	Name of the Dist.	Name of the Taluk	Name of the Division	Name of the Range	Name of the Forest Block	Total Area of the Block	Area included in the Sanctuary
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Cuddapah	Rajampet	Rajampet	Kodur Rajampet	Seshachalam (P) R.F. Seshachalam Extn.(Part)	26846.00	24166.00
2.	Chittoor	Chandra-giri	Chittoor East Divn.	Tirupathi	Chamala R.F.	7746.63	7746.63
		-do-	-do-	-do-	Chamala Tirupathi Hill R.F.	7508.00	7508.00
		-do-	-do-	-do-	Tirupathi Extension 'A' (Part)	1656.00	828.00
		-do-	-do-	-do-	Tirupathi Extension 'B' (Part)	727.00	650.00
		-do-	-do-	-do-	Mamandur Extension	4164.00	4164.00
		-do-	-do-	-do-	Mamandur(Part)	712.00	360.00
		-do-	-do-	-do-	Karakambadi R.F.	2990.00	1490.00
		Vayalpadu	-do-	Bhakarapet	Nagapatla	7575.70	3782.00
		Vayalpadu	-do-	-do-	Talakona	7815.98	1303.37
TOTAL						67541.31 Hectares (OR) 675.413 Sq.Kms.	52597.00 Hectares (OR) 525.97 Sq.Kms.

BOUNDARIES OF THE SANCTUARY

The boundaries of the Sanctuary as delineated in the map kept in the Office of the Chief Conservator of Forests and Chief Wildlife Warden, Andhra Pradesh, Hyderabad are as follows:

North 'A' to 'B': the boundary of the Sanctuary starts from Gundampenta Rest House Building which is shown as 'A' on the map. The line generally runs North-Eastern direction along Northern escarpment of the Patravanisela (stream) upto Gundala Yeru at a distance of 20 Metres upto a point where it meets Musti Yeru (stream). Then it follows Musti Yeru running southernly direction upto a point near Pullaguripenta Forest Rest House, which is marked as 'A1' on the map.. Then it runs eastwards upto a point where in the cart track from Settigunta meets the [illegible] Forests line which is shown as 'B' on the map.

East 'B' to 'C': From point 'B', the Sanctuary boundary runs along the Eastern boundary of Seshachalam Extension Reserve Forest and Seshachalam Reserve Forest boundary excluding the enclosures Balapally and then follows Mamandur Extension Reserve Forests and then Mamandur Reserve Forest line excluding Mamandur village enclosure and then runs due South in straight line 184 degrees through Mamandur Reserve Forest and also outside till it meets point 'C' South East corner of Tirupathi Reserve Forest as shown in the map.

South 'C' to 'D': Thence the Sanctuary boundary runs generally Western direction cutting through Tirupathi Extension Reserve Forest and then follows the Reserve Forest boundary excluding Galigopuram area and then follows the foot hills of Tirupathi extension block upto a point (C1) (as shown in the map) and then follows to foot hills upto Kalyani Dam thence follows to inner side of the Kalyani Dam upto a point (C2) where it meets the tar road leading from Tirupathi to Bhakarapet then it meets the common boundary line of Nagapatla Reserve Forest and Bhakarapet Reserve Forest at point (D).

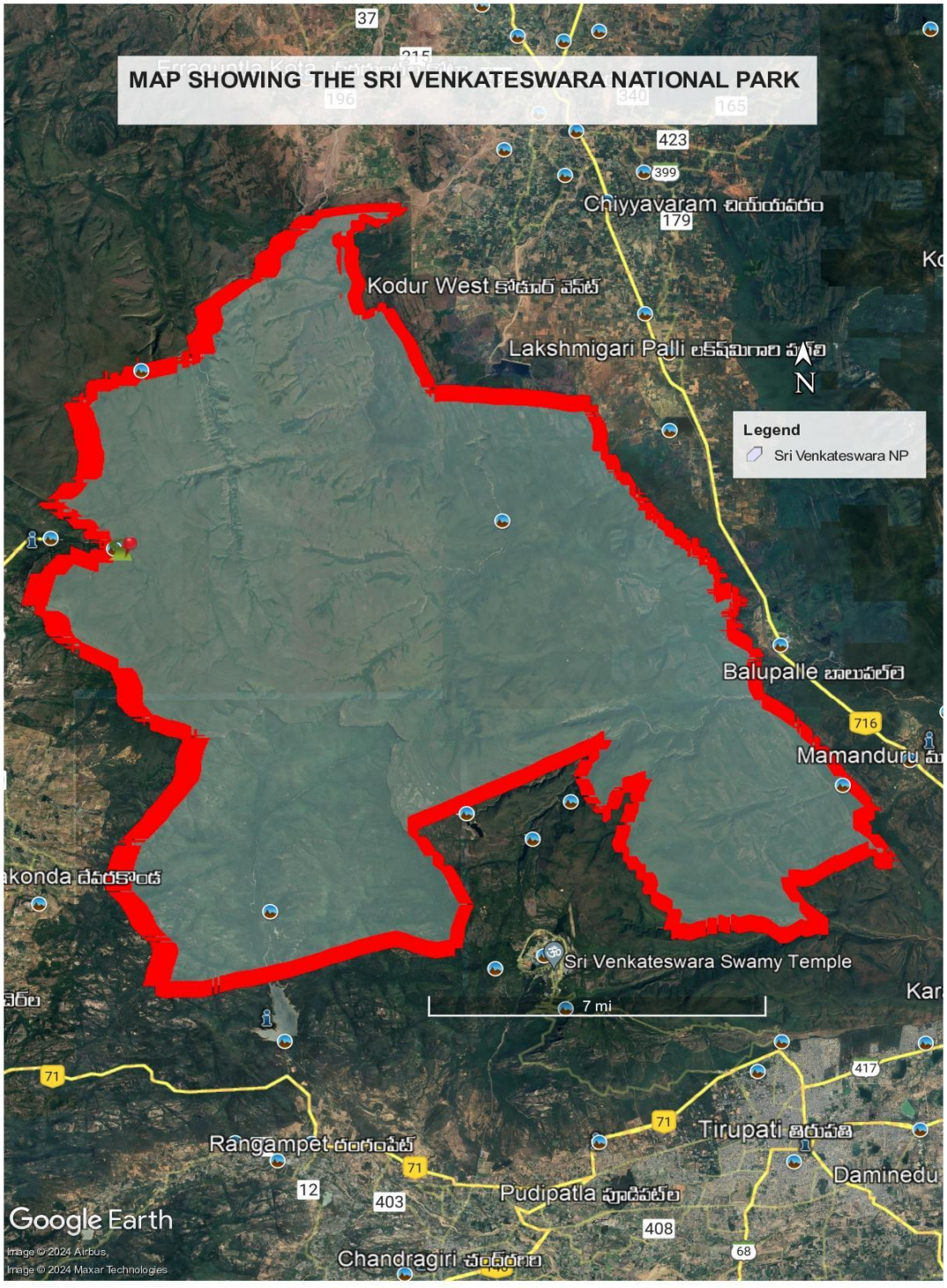
Point 'D' to 'A': From point 'D' Sanctuary boundary runs generally North direction following the common boundary of Bhakarapet Reserve Forest, Nagapatla Reserve Forest and then runs along the Western boundary of Chamala R.F. upto Moramthippa. From Moramthippa due North to the junction of foot path from Chintakunta to Raikala Chinna Kanuma, thence it goes in a due North Western direction at an angle of 315 degress till it meets the junction of road from Nerabailu to Siddeshwaram and foot path Turakapally to Siddeshwaram. Then line follows the road to the junction of cart track from Siddeshwaram with the metalled road from until it meets the crossing of Talakona Pillavanka and the cart track from Siddeshwaram to Upparpalli Reserve Forest including shoreatalura preservation plot, then the line climbs due North East cutting the escarpment and inter district boundary and meets the bridle path from Gundampenta at 24th mile, there again follows the bridle path to Point 'A'.

The Conservator of Forests (Wildlife Management Circle), Tirupathi who is authorized to perform the functions of the District Collector vide G.O.Ms.No.39, EFS&T(FOR.III)DEPT., dated 17.4.1997 has determined the existence, the Nature and the extent of the persons in the Sri Venkateswara Wildlife Sanctuary vide his proceeding No.903/80/DM, dated 6.3.1998 as follows:

"The local communities are entitled to the rights and concessions as admitted at the time of settlement of Forest Blocks".

C.S. RANGACHARI,
Special Chief Secretary to Government.

Map 33. Map showing the Sri Venkateswara National Park



Compartment wise Area in Sri Venkateswara National Park

Sl No	Name of the Division	Name of the Range	Name of the Beat	Compartment Nos.	Area under S.V.N.P.
1	2	3	4	7	8
1	Tirupati	Tirupati	Papavinasanam	133	750.00
				Total:	**750.00**
2			T.N. Palem Central	134	582.00
				Total:	**582.00**
3			Mamandur North	137	475.00
				138	324.55
				139	325.45
				140	475.00
				141	200.00
				Total:	**1800.00**
4			Mamandur South	135	300.51
				136	550.00
				142	0.00
				143	363.86
				144	0.00
				Total:	**1214.37**
			Total Tirupati		**4346.37**
5		Bhakarapet	Chamala East	60	600.00
				61	600.00
				62	575.00
				63	800.00
				64	900.00
				65	875.00
				Total:	**4350.00**
6			Chamala West	66	815.00
				67	936.00
				68	410.63
				69	825.00
				70	410.00
				Total:	**3396.63**
			Total Chamala		**7746.63**
			Division Total:		**12093.00**