

REVITALIZING SACRED CORE OF BHUBANESWAR, ORISSA

*Thesis Submitted in the partial fulfilment of the requirements for the award of the
degree of*

MASTER OF LANDSCAPE ARCHITECTURE

By

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DECLARATION

I, MAYUKH CHANDRA SADHUKHAN, Scholar No - 2016MLA018 hereby declare that the thesis entitled "Revitalizing Sacred Core of Bhubaneswar City, Orissa"; submitted by me in partial fulfilment for the award of *Master of Landscape Architecture*, in School of Planning and Architecture Bhopal, India, is a record of bonafide work carried out by me. The matter embodied in this thesis has not been submitted to any other University or Institute for the award of any degree or diploma.

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CERTIFICATE

This is to certify that the declaration of "Revitalizing Sacred Core of Bhubaneswar, Orissa"; is true to the best of my knowledge and that the student has worked under the guidance of the following panel.

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ABSTRACT

Indian sacred and cultural landscape of historical core of Bhubaneswar are affected by many development pressures. Using Old town Bhubaneswar, Odisha, as my study area, I propose an integrated landscape master plan to conserve cultural landscape based upon restoring the natural and spatial architectural wanders and their association with the people which constitute the old town. A group of Odessan temples are located at the heart of capital city that became affected by urban growth over time. Increasing economic growth in last two decades has triggered in several problems such as undesirable development, traffic congestion, confusing circulation, traffic congestion, and visual chaos, which led to the loss of different values. The structure of the pilgrim landscape constituted by processional pathways, circumambulatory pathways, sacred tanks, sacred trees and tree groves, and historic living temples. The proposal is an integrated landscape conservation plan which address historical heritage, natural heritage and tourism of the Ekamra Kshetra of Bhubaneswar.

ABSTRACT HINDI

भुवनेश्वर के ऐतिहासिक कोर के भारतीय पवित्र और सांस्कृतिक परिदृश्य कई विकास दबाव से प्रभावित हैं। पुराने अध्ययन भुवनेश्वर, ओडिशा का उपयोग, मेरे अध्ययन क्षेत्र के रूप में, मैं प्राकृतिक और स्थानिक वास्तुशिल्प भटकने वाले लोगों और पुराने शहर का निर्माण करने वाले लोगों के साथ उनके सहयोग के आधार पर सांस्कृतिक परिदृश्य को संरक्षित करने के लिए एक एकीकृत परिदृश्य मास्टर योजना का प्रस्ताव करता हूँ। ओडेसन मंदिरों का एक समूह राजधानी शहर के दिल में स्थित है जो शहरी विकास से समय के साथ प्रभावित हुआ। पिछले दो दशकों में आर्थिक विकास में वृद्धि ने कई समस्याओं जैसे टिकाऊ विकास, यातायात की भीड़, भ्रमित परिसंचरण, यातायात की भीड़, और दृश्य अराजकता में ट्रिगर किया है, जिससे विभिन्न मूल्यों का नुकसान हुआ। जुलूस के मार्गों, परिक्रमा या प्रदक्षिणा मार्ग, पवित्र टैंक, पवित्र पेड़ और पेड़ के जंगल, और ऐतिहासिक जीवित मंदिरों द्वारा गठित तीर्थयात्रा परिदृश्य की संरचना। प्रस्ताव एक एकीकृत परिदृश्य संरक्षण योजना है जो ऐतिहासिक विरासत, प्राकृतिक विरासत और भुवनेश्वर के एकमत्र क्षेत्र के पर्यटन को संबोधित करती है।

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CHAPTER 1: INTRODUCTION

1. Background

The capital of Odisha, Bhubaneswar has a historical background that dated back to over 2000 years. It was the ancient capital of Kalinga, and in Dhauli the famous historic battle was fought between Emperor Ashoka and the Kalinga army near Bhubaneswar. After this battle Ashoka devoted himself towards Buddhism. The 'city of temples' Bhubaneshwar, named after the 'Lord of Three Worlds', Tribhuvaneshwar. Bhubaneswar still preserves many of India's finest temples, around which the religious and cultural life of the city associated. There are also the famous Udaygiri and Khandigiri caves from the Jain period. The word Bhubaneswar means the 'God's World' which represent ancient temple architecture. Mythological references describe the area as Ekamra Kshetra and also a Saiva Pitha. Saiva Pitha means place of Saiva culture. In 1936 Odisha became a separate state, carved out of Bengal and Bihar, then Cuttack was its capital. A new capital was built in Bhubaneswar in 1956. Together with Bhubaneswar, Konar and Puri forms the 'golden triangle', of most visited tourist destinations in Eastern India, for its magnificent artwork in painting, sculpture and majestic architectural heritage. These magnificent and majestic urban fossil need to be conserve as urban heritage.

Need of the Study

The capital city of Odisha, Bhubaneswar has its origins more than 3000 years in the past. A well-planned city, Bhubaneswar is on the fast-track of development and is emerging as an information and technology hub. The old city is located at the heart of this rapidly growing city center. There is also a smart city proposal for Bhubaneswar in the first phase of development announced by our Prime Minister Sri Narendra Modi. So there is a possibility of conflict between characters of two cities from two different era. In between this rapid development of the modern city, there is a chance to loss of these religious and cultural value of this city.

- The sacred quality of the historical precinct and mythological and historic significance.
- Cultural gatherings and pilgrimage.

- The importance of homogeneity in terms of natural landscape, history, culture and architectural style.
- Sequential transformation of the landscape.

Need of the Proposal

- The historical waterbodies which managed urban flooding are getting polluted
- The area of study is adjacent to Puri and Konark which attract large amount of people.
- Undesirable development encroached all vacant open spaces.
- Historical waterbodies and open spaces are encroached by ongoing urban development.
- Filling of waterbodies for development

2. Aims and Objectives

Aim:

To propose an integrated masterplan for conserving the integrity of historical sacred landscape of Bhubaneswar.

Objectives:

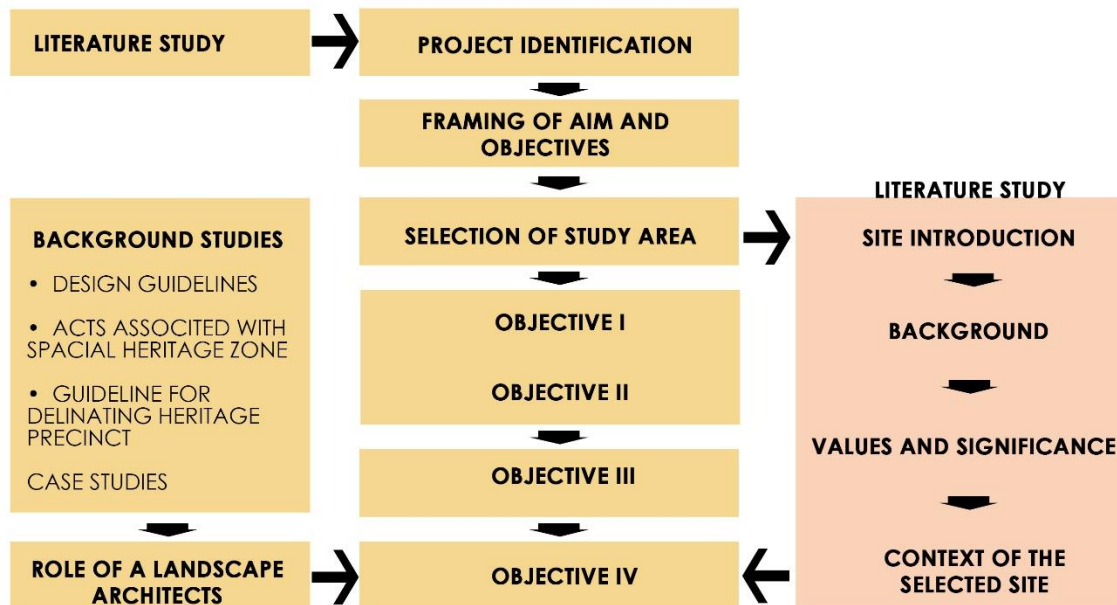
- I. To map the evolution and development of spatial (both static and temporal) and the socio-cultural strata of the study area.
- II. To study the landscape association of historical components this significance in present days.
- III. To identify threats and issues (anthropogenic and environmental) to the study area.
- IV. To propose an integrated landscape master plan for the study area.

3. Scope and Limitations:

Main focus of my thesis on the physical construct and constituents of elements. The focus of the study is looking as an elements with respect to the city level activities and religious activities of temple precinct and issues related with those activities.

- To document the evolution of the study area
- To assess the environmental and anthropogenic threats
- To assess the quality of interventions
- To propose a landscape design solution for the whole study area
- Mapping of sacred landscape around the precinct
- To propose a landscape master plan for the historical precinct.

4. Methodology



OBJECTIVES	SUB-OBJECTIVES	METHODS
TO MAP THE EVOLUTION AND DEVELOPMENT OF THE STUDY AREA.	Mapping of Existing scenario" Mapping of "Structural construct" Mapping of changes over time.	Collected maps, primary survey Collected map, primary survey, photographs Collected maps, literature, primary survey, photographs
TO STUDY THE LANDSCAPE ASSOCIATION AND SIGNIFICANCE IN PRESENT DAYS	Mapping of "Typology of space making" Identify "Spaces with different qualities" of the study area.	Primery servey Primery servey
TO IDENTIFY THREATS AND ISSUES TO THE STUDY AREA	"Threat identification" Find out "Potaintial areas"	Overlapping of maps already collected and generated in objective I and objective II
TO PROPOSE A LANDSCAPE DEVELOPMENT MASTERPLAN FOR SELECTED STUDY AREA.	"Stategic prposals" "Design proposals" "Policy outline"	Literature studies, case studies, guidelines, findings.

CHAPTER 2: LITERATURE STUDY

2.1 Sacred Landscape

A sacred site is a place occasionally above or under water, which is especially celebrated by a person, culture or cultural group as because of spiritual belief and practice and likely religious performance. In addition, to satisfy the definition and reflect its rich and wide variety, a sacred site must also have one or more of these following nineteen characteristics found under the headings: Descriptive, Spiritual Functional and Other. (Thorley & Gunn, 2007)

➤ Descriptive

- It is dynamically interconnected sacred landscape.
- It is founded upon, a natural topographical feature, e.g., a mountain, rock, cave, tree, grove, forest, spring, well, river, lake, the sea, an island, etc.
- It is recognized as carrying special manifestation of flora and fauna, natural phenomena and ecological balance.
- It is elaborated with manmade symbols or artefacts, e.g., rock-carvings, painting, holy or religious objects.
- It is partly or solely man-made, e.g., temple, church, wayside shrine.
- It is a memorial or reminder to a significant recent or past event in history, legend or myth, e.g., a battle site, creation or origin myth.

➤ Spiritual

- It is renowned as having special energy or power which is clearly noticeable from that of alike landscape or surrounding.
- It is familiar as a special place which acts as a cross-over to the spirit
- It is renowned as the dwelling place of guardian or owner's feelings attached to it.
- Its spiritual forces or 'owner' spirits are in a commonly respectful exchange of ideas with local people with special knowledge acting as guardians, who play significant roles as mediators, negotiators between the human, natural and spiritual dimensions.

- It is recognized as a place where the ancestors are present and especially respected, e.g., burial grounds.
- It is a place of spiritual transformation for single persons or the community, e.g., healing, initiation, religious conversion, funeral, vision quest.

➤ **Functional**

- It is a distinct place where relationships, both interpersonal and throughout the whole community, can be conveyed and self-confessed, often through a particular form of observance, e.g., prayer, songs, chants, dance, ritual or ceremony.
- It is a place specifically associated with resource gathering or other key cultural activities, e.g., gathering medicinal plants or material for sacred or ritual ceremony or objects, fishing, hunting, cultivation, burial of ritual objects, giving birth.
- It is a particular pathway or route between important or sacred places, e.g., sacred pathway, pilgrimage route.
- It is emphasis on past or present special visits of religious performance or pilgrimage.
- It is a cultural sacred-secret, with its setting and/or particular religious function only known to a limited number of people.
- It has an important association with astronomical order and/or calendrical phenomena, e.g., astronomical alignment, celestial-Earth correspondence, seasonal ritual or festival. (Thorley & Gunn, 2007)

➤ **Other**

- It clearly fulfills the stem definition but has unique cultural features that are not characterized in the previous eighteen characteristics. (Thorley & Gunn, 2007).

2.2 Cultural Landscape

A cultural landscape, as defined by the World Heritage Committee, is the "cultural properties [that] represent the combined works of nature and of man." (UNESCO, 2012)

Any landscape that has been intentionally or organically developed due to direct influence of man or the practices followed by him, contribute to the formation of a cultural landscape.

According to the world Heritage Committee, there are three types of Cultural Landscapes.

- I. Cultural Landscape- Intentionally developed by man.
- II. Organically Evolved Landscape- Presence of man and his works, shaping the landscape, which is further divided as- Relict and Continuing Landscapes.
 - i. Relict Landscape- One which shows the co-existence of man with nature, but is no more in use.
 - ii. Continuing Landscape-One which has been continually worked upon by man and is still in use.
- III. Associative Cultural Landscape- The landscapes where, people's traditions, religious beliefs, artistic associations etc have played a role in shaping it are known as Associative Cultural Landscapes.

2.3 Pilgrimage Tourism

Sacred sites, which attract pilgrims, are part of every religion. Religiously or spiritually inspired travel has become very popular in recent days also play an important portion of international tourism in recent years. Religious tourism or tourism base on faith is not only about pilgrimages but faith based tourism may occurred for life cycle events, or public-spirited projects and for religious settlements and assemblies. Although the social-psychology of religious tourism is based on emotion and faith. (Jirásek, 2014)

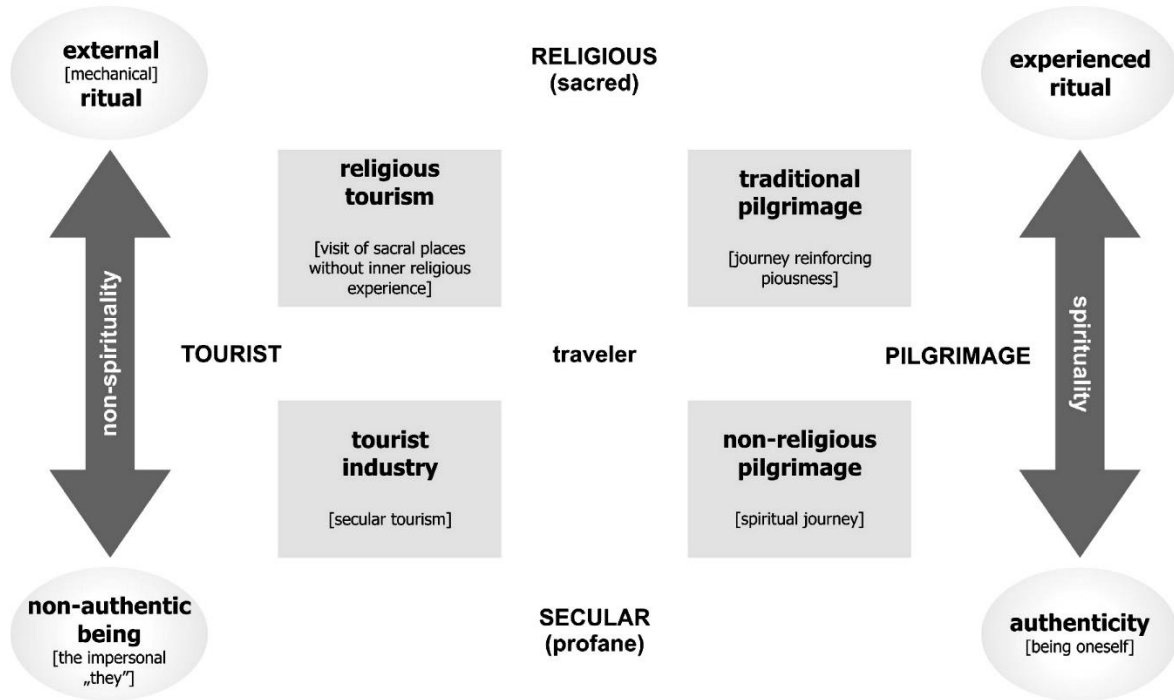


Figure 1 Pilgrimage tourism based on spirituality and authenticity (Jirásek, 2014)

2.4 UNESCO guidelines for Cultural Heritage and Cultural Landscape

According to operational guideline of the Heritage committee UNESCO, a site designated as cultural heritage site should:

Represent a masterplan of human artistic genius (monument, group of buildings or site)

- Display a significant interchange of human values, over a long time or within a cultural area of world, on growths in architecture or technology, town planning, monumental arts and landscape design.
- Bear a distinctive or at least unique testimony to cultural practice or to a civilization which is living or which has gone.
- Be an excellent example of a building type or architectural or technological ensemble or landscape which explains important stages in human history.

- Be exceptional example of a traditional human settlement, land-use which is illustrative of culture or human interaction with the environment particularly when it has become defenseless under the impact of permanent change.
- Be directly to tangibly associated with events or living traditions, with ideas or beliefs, with artistic and literary work of exceptional universal importance. In addition it would be more possible to have one more criterion from the natural heritage to taken into consideration for recognizing cultural heritage.
- Contain excellent natural phenomena or areas of special natural beauty and aesthetic importance. (UNESCO, 2012)

2.5 ICOMOS (International Council of Monuments and Sites) defined 'Historic

Landscape' in Its Venice Chapter of 1971 as 'the urban or rural setting in which it found the proof of a specific civilization, an important development or a historic event. These may classify into the following:

Natural landscapes: The regional setting having the planned environs, its main component being physiography, hydrological feature and vegetation.

Cultural Landscapes: Landscapes other than pure nature, those that are a consequence of human activity on the natural setting, evolving as utilitarian patterns, e.g. Terrace Farming.

Designed Landscapes: Imaginative design expressions linked with architecture or natural environment. Based on the location or setting in the regional fabric can be classified as:

- Monuments In urban setting e.g. Shaniwar Wada, Pune
- Monuments In rural setting e.g. Kailash Temple, Ellore

- Archaeological remains in rural setting e.g. Ajanta Caves, Aurangabad
- Parks/gardens of historical Importance e.g. Degiri Fort (Daulatabad Fort), Aurangabad Issues and approach to the site will vary accordingly.

2.6 Urban ecology

Urban ecology is related with ecological processes in urban environments. This covers all parameters of the ecology of any organisms found in urban areas. The study of urban ecosystems that include humans living inside a cities and urbanized landscapes. It is a multidisciplinary field that aims to understand how human and ecological processes can live together in human-dominated

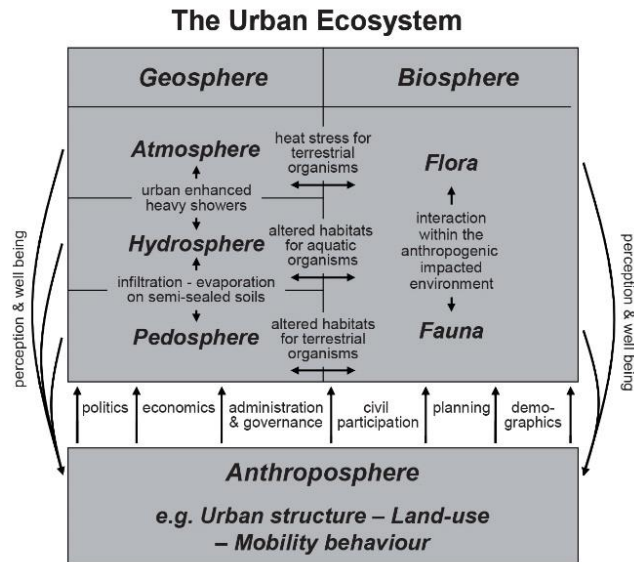


Figure 2: Urban ecology

systems and help societies to become more sustainable. Urban Ecology provides power of speech to an ecological urbanism.

2.7 Urban stream syndrome

The indications of the urban stream syndrome consist of a pretentious hydrograph, elevated concentration of nutrients and contaminants, changed channel morphology and reduced the biodiversity. (Walsh, et al., 2005) These effects are generally go together with other indications which are not detected in all urban areas, such as drop of base-flow and increase of suspended solids concentration. Although

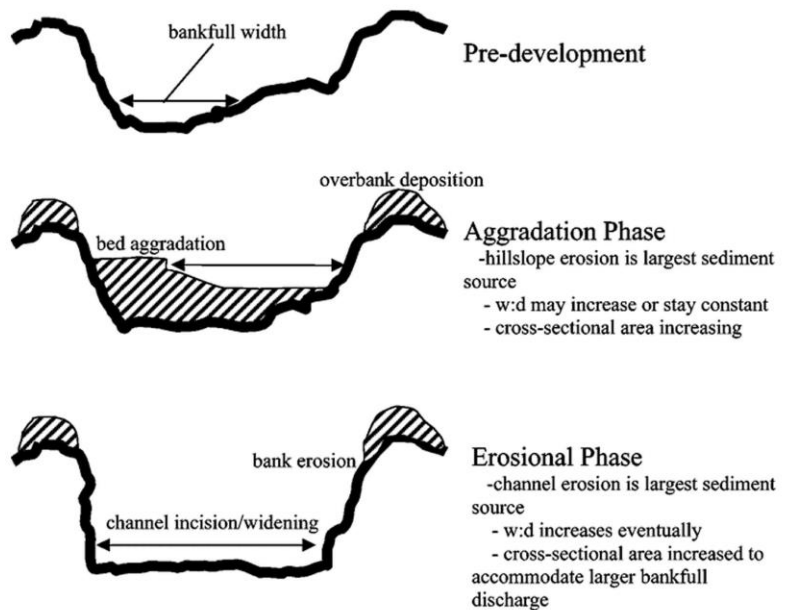


Figure 3 The Urban Stream Syndrome: Riparian/Channel Alteration (Paul & Meyer, 2001)

most of the symptoms are seen in regularity in their occurrence in urban areas globally. Their degree of intensity by which they change the aquatic ecosystems is highly variable and depends on local conditions.

The mechanisms driving these syndrome are integrated and variable, but most of the impacts result from a few major large scale sources, particularly from urban storm water runoff delivered to stream by hydraulically efficient drainage system. Other impacts consist of combined sewer overflows (CSO), waste water treatment plant (WWTP) effluent, legacy pollutants (long-lived pollutants from earlier land use), and illegal discharges of waste water. Most of the research on urban drainage

FEATURES	SYMPTOMS
HYDROLOGY	Increasing frequency of overland flow
	Increasing frequency of erosive flow
	Increasing magnitude of high flow
	Decreasing lag time to peak flow
	Increasing rise and fall of storm hydrograph
WATER AND SEDIMENT CHEMISTRY	Changes of baseflow magnitude
	Increasing concentration of nutrients (P, N)
	Increasing concentration of toxic substances
	Increasing temperature
	Increasing concentration of suspended matter
CHANNEL MORPHOLOGY	Decrease of organic matter retention
	Increasing channel width
	Increasing pool depth
	Decreasing stability of the channel
	Increasing scour
	Disturbance of the river continuity
	Changes in sedimentation processes
Enrockment of banks	
FISH	Decreased number of sensitive species
	Increase of tolerant species
	Changes of abundance
	Changes of biomass
INVERTEBRATES	Increased number of tolerant species
	Decreased number of sensitive species
	Decreased number of predators
ALGAE	Increased number of eutrophic diatoms
	Decreased number of oligotrophic diatoms
	Changes of biomass
	Presence of toxic algae
ECOSYSTEM PROCESSES	Decrease in nutrition uptake
	Leaf breakdown
	Net ecosystem metabolism
	Nutrition retention
	Production : Respiration ratio

Figure 4 Symptoms Associated with the Urban Stream Syndrome (Komínková, 2012)

impacts has focused on relationships between stream chemical and biological metrics and various topographical or hydraulic parameters, such as total catchment imperviousness, distance between stream reach and urban land and hydraulic efficiency of the sewer system. (Komínková, 2012)

Increasing volume of impervious surfaces and decreasing region of natural vegetation cover belong to the most distinct characteristics of urbanization. These changes significantly alter the hydrological conditions in the catchment and the performance of streams. The high volume of impervious surfaces causes an extensive increase of

surface runoff components, along with a decrease of groundwater recharge and base flow.

CHAPTER 3: PRECEDENTS – BEST PRACTICES

3.1 Introduction

The case studies are all literature based. The case studies has taken as a references to study the different aspect associated to sacred landscape and how to map those layers. Specifically heritage precinct like Orcha of Madhya Pradesh, Ghats of Varanashi etc. which are affected by anthropogenic activity. These two project have the similar context like my study area, old Bhubaneswar.

3.2 Case Study I: Cultural Landscape of Orchha (Sinha & Valderrama, 2014)

3.2.1 Introduction

Orchha is one of the most significant heritage towns in Madhya Pradesh, India. It was the capital of the Bundelas from 1531-1783 CE. Its monuments, temples, gardens, and murals represent great achievements in the arts, in buildings and landscape design. The cultural landscape sustained a rich tradition of myths, literary, ballads and folk arts. Site mappings of terrain and hydrology shown the historic landscape structure guided by vastu-vidya.

Bundela architecture had a deep relationship with the landscape. Visual axes integrated the buildings into an organized urban structure that today is barely visible, making the imaginative interpretation of the past. Palatine and temple designs of the Bundelas were stylistic innovations in medieval Rajput architecture. Based upon mandala concept with elements from Sultanate and Mughal architecture. Bundela art, an integral part of architecture, in palace and temple murals, is a window into their inner world. It depicts the cultural master narrative containing models for values and behavior.

The landscape structure evolved in harmony with sacred geometries—the circle of mandala and triangle of yantras. The approximately semi-circular city wall closes with the Betwa on the north and south. The western half of outer circle roughly follows to the city wall while on the rims of the inner circles are the locations of many Orchha temples. The east-west axis contains the sequence of palaces, Chaturbhuj Temple and urban growth towards the west city gate. Raja Mahal Palace illuminated with sunrise and sunsets on the winter and summer solstices.

3.2.2 Natural Heritage

The River Betwa, well-known as Vetravati/Vetravanti in past, is recognized great pureness and power in ancient Hindu texts. Described as the Ganga of Kaliyug, it is supposed to wash away all the sins accruing in this sinful age. Similar to other rivers of the Vindhyan Range, it is regarded as symbol of Shakti. The Tungaranya forest on

the banks of Betwa is recognised as tapovan (forest) where taught the Vedas and purify its evil's wilderness.

The settlement derived its name from the phrase 'Ondo chhe' which means low or hidden. The site was in reality bowl-like, protected by hills and forests. The citadel was constructed on an island in the River Betwa, as a jal durg (water fort) according to site planning and design principles described in the medieval Shilpa Shastras. The Orchha fort is unique since all other forts in Bundelkhand.

3.2.3 Architectural Heritage

Orchha's monuments are the main draw for tourists. Thirty six monuments are protected by State Archaeology and 20 are on the recommended list for protection. The Indian National Trust for Art and Cultural Heritage (INTACH) has acknowledged 165 monuments distributed over six kilometers in Orchha Heritage Zone as deserving of protection. The largest concentration of monuments is in the island citadel. Besides the palaces, temples, stables, hamams, weapon houses, and mansions, there are fort-walls, bastions, gateways, and the bridge over the moat—all part of a fort complex that today should be a protected heritage precinct as in an archaeological park. They form a heritage precinct that should be protected and conserved. Another group of monuments are the cenotaphs on the Betwa that are protected but are not integrated with the riverfront. Charbagh gardens connect two major groups—these can be developed as a mini archaeological park.

3.2.4 Cultural Heritage: Myths and Legends

Vaishnava mythology has imprinted the cultural landscape of Orchha in a significant way. The epic Ramayana has inspired the flowering of Bundela arts—palace and temple murals, iconography of Vanvasi and Chitrakut temples and the participation of the entire community in festivals and processions celebrating the epic events. The palace turn into the Ram Raja Temple, the center of Orchha, from where Lord Ram governed over his kingdom.

The legend celebrates the courage of Orchha ruler in keeping the symbol of his faith even as he was forced to capitulate to the stronger Muslim power. Other legends celebrate the rulers as upholder of dharma, protectors of cows and Brahmins, and temple builders in the holy cities of Mathura, Vrindavan, and Varanasi. Birsingh Deo, the most famous ruler of Orchha, is reputed to have died saving a cow from the clutches of a tiger.



Figure 5: Tourist spot at Orchha

3.2.5 Performative landscape

The cultural heritage of Orchha is rooted in Vaishnavite mythology and its re-enactment in the daily life of its residents. Pilgrims visit the Orchha temples in large numbers on religious festivals. The temple activities include the devotee obtaining darshan, giving their offerings to the gods, singing bhajans (sacred chants), and performing life cycle related ceremonies. Outside the temples, pilgrim activities include bathing in Betwa and participating in the ritual processions that culminate in the immersion of idols in the river. Fairs (melas) on festivals in the public spaces draw huge crowds from Jhansi, Tikamgarh and nearby towns and villages. These ritual enactments in Orchha's public spaces are demonstrations of living traditions inherited from the past. Panchkrosi parikrama (circumambulation) on Orchha streets occurs every month. The ritual procession is a meaningful use of public spaces, an aspect of intangible heritage that should be conserved by addressing its spatial requirements. The parikrama begins at the cenotaphs and covers 12 kilometers in two days.



Figure 6: Pilgrim in Orchha

The exchange of images and objects in the temple plazas and fairs is part of Orchha's local economy. It creates a kinetic landscape, every time in flux, reacting to the visitor flow and festival cycle. This shifting landscape is juxtaposed with the monumental landscape of heritage buildings in the fort and town. Public feast is offered to 25,000 people at the Temple during the festival of Ramvivah Pancham (Ram and Sita's wedding).

The huge surge of pilgrims occurs on Makar Sakranti, Basant Panchami, Ramnavami, Ramvivah Pancham, and Kartik Purinima. The festivals and fairs, although 'pulse events' occurring episodically, stretch the carrying capacity of public spaces causing overcrowding, traffic glitches, solid waste management problem and river pollution.

3.2.6 Master Plan

Orchha's heritage is under threat from new urban development, degradation of historic sites, and loss of collective memory. In this proposal, heritage precincts are protected and managed through informative trails connecting the monuments in the archaeological park proposed in the island with those in the town.

- Cultural heritage is encouraged through reclamation of historic plazas and gardens for the performances and exhibition of arts and crafts, and extension of panchkroshi parikrama marg for the ritual processions.
- Natural heritage is conserved through ecological planning of the riverfront and the ghats expansion.
- Sanitation improvement through storm water management, street tree planting, and constructing wetlands in the moat was suggested. Low-income housing design using vernacular architecture precedents is proposed.
- Traffic management by separating high speed traffic from the pedestrian core, providing parking and other service facilities.
- The master plan offers an outline for conservation of Orchha's heritage through environmentally sustainable site planning proposals.
- The living traditions of temple worship, festivals, and rituals performed in the Betwa, are very site specific, leading to the continuous connection of the public spaces.

The current day urban landscape of Orchha lacks legibility with the monuments, vernacular architecture and encroachments in an uneven juxtaposition and the public spaces crowded with large number of people, vehicles, and shops in an unsanitary milieu. Archeological monuments in the island fort and temples in town are not linked by any discernible heritage trails. There is little or no heritage interpretation with the exception of signs located at the monument entries. Pilgrim offerings, washing, and cremation rituals are polluting the River Betwa. The pedestrian scale of the town is threatened by heavy vehicular traffic. Orchha's natural, cultural, and archeological heritage is at increasing

risk through loss of collective memory and drastic social and economic changes in the last century.



Figure 7: Master Plan of Orchha

- The master plan brings together the site interventions within a socially and environmentally sustainable vision for the future.

- The reclaimed open spaces of temple plazas, restored gardens, and riverfront ghats and park are stitched together with pedestrian and bike trails that allow the pilgrim and the tourist to explore the cultural landscape of Orchha.
- Trails through the archaeological park connect with pilgrimage route linking the temples with river and extend into the countryside. Informational signage and rest facilities guide the traveler and the pilgrim in exploring the landscape from the chosen trail.
- An informed understanding of landscape heritage is made possible by reclaiming public spaces associated with the temples and the riverfront —some of which are derelict, others overcrowded. These plazas become nodes in heritage trails and processional paths, offering vistas and resting places that allow for presentation and representation of the multi-faceted heritage of Orchha.
- The historic gardens in the island fort, sacred center, and cenotaphs on the riverbank, are restored based upon speculations on their original planting design, water regimes, and layout.
- The proposal of low income housing clusters for the burgeoning resident population are based upon the time tested vocabulary oriented around private courtyards, semi-public community spaces, and building details that give identity and enhance a sense of place. The existing but inadequate household grey water and storm water system of nalis (narrow drain) is upgraded by extending it and remediating ground water pollution through wetlands in the historic moat.
- The river edge, a ritual bathing space and site of idol immersion during festivals, is presently ill-defined and only partially accessible. Pilgrim activities pollute the waters and threaten the traditions that rest on the sanctity of the river. Increased flow of water is made possible by building a dam around the natural dyke and controlling it through sluice gates.
- Ghats (steps) are renovated and extended for the religious and recreational activities. Chattris (kiosks) are proposed for shade and for framing views.
- A floodplain park offers views of the fort and the river on a hiking trail.

Orchha's heritage is inextricably bound up with its cultural landscape of riverfront, gardens, plazas, monuments and the urban fabric. It is necessary that this landscape be treated as an integrated entity for it to be conserved and managed. The town carries on a dialogue with the historic monuments, temples, River Betwa, and the forests beyond. The aesthetic qualities of the townscape reside in the vernacular housing and in the quality and upkeep of its civic spaces.

3.3 Case Study II: Ghats of Varanasi (Sinha & Kamlapurkar, 2014)

3.3.1 Introduction

The cultural landscape of the ghats evolved in as patio-temporal order created from self-organized systems of worship and pilgrimage. Its structure, complex in its layering and detail and in responding to natural processes was resilient in its recovery from natural disasters as well as cultural upheavals. However as the landscape becomes increasingly stressed from intensive use and ground and water pollution, its irreplaceable heritage is being lost. The dilapidation of the urban edge due to ill-maintenance, private encroachment, pollution in the Ganga, and increasing pressures of use caused by three million visitors every year is stretching its carrying capacity and putting heritage at risk. The shift of the river and silting of banks has impacted the riverfront landscape causing alarm among conservationists who have been pressing since 2001 to have the riverfront and the old city nominated in the UNESCO World Heritage List. Varanasi ghats fit the categories of 'an organically evolved landscape' as well as 'an associative cultural landscape' in the cultural landscape criteria. The ghats on the Ganga have evolved over centuries into the spiritual center of Hinduism. Urban infrastructure (sanitation, solid waste management, and water supply) has been upgraded under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and measures have been taken to reduce the river pollution under the Ganga Action Plan launched by the Government of India.

Intangible and tangible cultural heritage encompassed by the cultural landscape of the ghats is interpreted in its mythic, enacted, and historic dimensions. The three aspects are mutually constitutive—the landscape is read as a tapestry of mythic narratives and is at the same time a setting for their continuing performing by the devotees thus keeping ancient traditions alive and vigorous. The land-water interface has been culturally significant for over two millennia. While the chronology of its evolution into the contemporary landscape has many gaps, the documented history of the last three centuries holds a clue to understanding the ways in which its built environment was shaped in response to cultural beliefs.

3.3.2 Architectural Heritage

The historic character of the ghats is most evident in riverside palaces and temples built in the last three hundred years. Royalty and nobility from different parts of Indian subcontinent built palaces for extended stay by elderly family members who wished to spend their last days in the holy city of Varanasi. The earliest surviving palaces are those built by the rulers of Rajasthan. Man Mandir was built by Raja Man Singh of Amber in 1586 CE and its rooftop houses an astronomical observatory built by another Amber king Sawai Jai Singh in 1710. At Rana Mahal Ghat, is another historic palace built in 1670 by Rana Jagat Singh of Udaipur. Eighteenth century palaces by the Maratha rulers include those built by Peshwa Baji Rao I and Raghoba Balaji in 1735, by Raghujji Bhonsale in 1795, and Indore State Palace by the Holkar queen Ahilyabai in 1778-85. Nineteenth century palaces include those built in 1830 by the Raja Dipatiya of Champaran, by Jiyajirao Sindhia, ruler of Gwalior in 1864, by the Vijayanagar ruler on Kedar Ghat in 1890, and by Rana Shamsherbahadur of Nepal at Gaya Ghat. Ministers of the Maratha kingdoms of Nagpur and Gwalior built palaces on Darbhanga and Jatar Ghats. The local rulers of Banaras also built on the Ganga—Chet Singh built a small fortress in the mid-eighteenth century and Prabhunarayan Singh constructed Ganga Mahal on Assi Ghat in 1830. Palaces continued to be built until the beginning of twentieth century—they include one on Assi Ghat by the queen Radhakunwar of Sursund and by the industrialist Baldev Prasad Birla on Tulsi Ghat. Many of the palaces are no longer in active use and can be adaptively re-used as public facilities. Together with temple spires, they contribute to the iconic view of the Varanasi ghats popular worldwide.

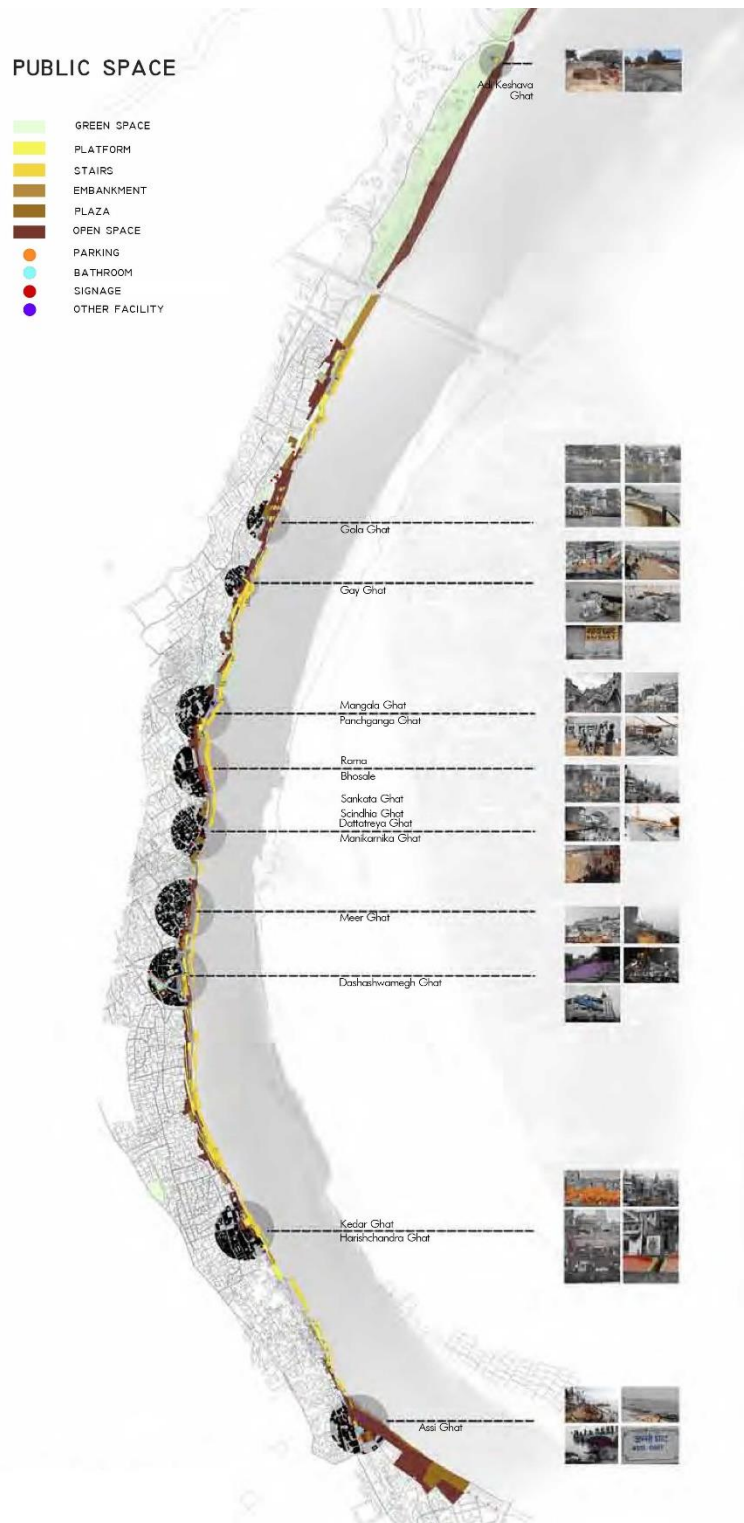


Figure 8: Public Places in Varanashi

3.3.3 Cultural Heritage: Myths and Legends

Myths are re-enacted and homage to gods and goddesses offered on a daily and episodic basis, invigorating memory and renewing values, in the process generating

fluid space. The Ganga and its ghats become sites of spectacle and performance in a temporal rhythm derived from the rising and setting sun and the changing flow of the Ganga in the dry and monsoon seasons. Death and its rituals on cremation ghats offer a macabre spectacle to the voyeurs. The ghats are the iconic image of Varanasi and of Hindu India. They are highly imageable in that they can be viewed in their entirety from the Ganga. The distant and near views generate a strong mental image in the observer. The ghat panoramas have been popular since the eighteenth century and have influenced a 'way of seeing' the cultural landscape. Their strong image, evoked from a consistent design vocabulary used in the past, is threatened by incompatible building structures, visual clutter of signs and billboards, and dilapidation. Design regulations of building facades and materials are prescribed to preserve their aesthetic character.

3.3.4 Performative landscape

Myths explain the sacred geography of Varanasi and the embodied practices that give it meaning and value in ways history cannot. Myths occur in absolute space and eternal time. Their enactments impart a powerful and timeless quality to the landscape. Varanasi traces its origin to Anandvana, the forest of bliss where Lord Shiva sits in a yogic posture with his eyes closed listening intently to his wife Parvati playing the veena. He creates the cosmos contained in Kashi with his yogic power and her music. He strikes his trident to hold the city and place it beyond the ravages of time. He catches the sacred Ganga in his locks as she pours down from heaven as a result of sage Bhagirath's penance to revive the sixty thousand sons of King Sagara. She purifies and sanctifies, washing away physical dirt and moral sins. In her phenomenal form, the Ganga invites rich visual, tactile, and haptic experiences in everyday, humdrum activities and performances that carry profound meanings. The tradition of ritual bathing at festivals, in the course of pilgrimage and in life cycle events, has continued through the centuries and carries great significance.

The sensual experiences on Assi Ghat, Harish Chandra Ghat, Dashashwamedha Ghat, Manikarnika Ghat, and Panchganga Ghat are depicted in three layers showing the acoustic, olfactory, and tactile experience. Places with multiple sensual experiences are 'hotspots' that give visitors the strongest impressions of acoustic,

olfactory, or tactile sensations. The size of hotspots stands for the extent of the stimulation, meaning the larger the hotspot is, the stronger the impression of the activity. Certain activities, such as aarti and cremation, have more than one kind of sensual stimulation and are therefore connected in this three-layer diagram. The collages capture each kind of sensual experience-- aarti and puja are stronger in acoustic stimulation while flowers, burning incense, and smoke have the strongest impression of olfactory sensation. Bathing in the Ganga, eating food, the presence of fire and water, and the breeze felt in flying kites are rich tactile stimulations.

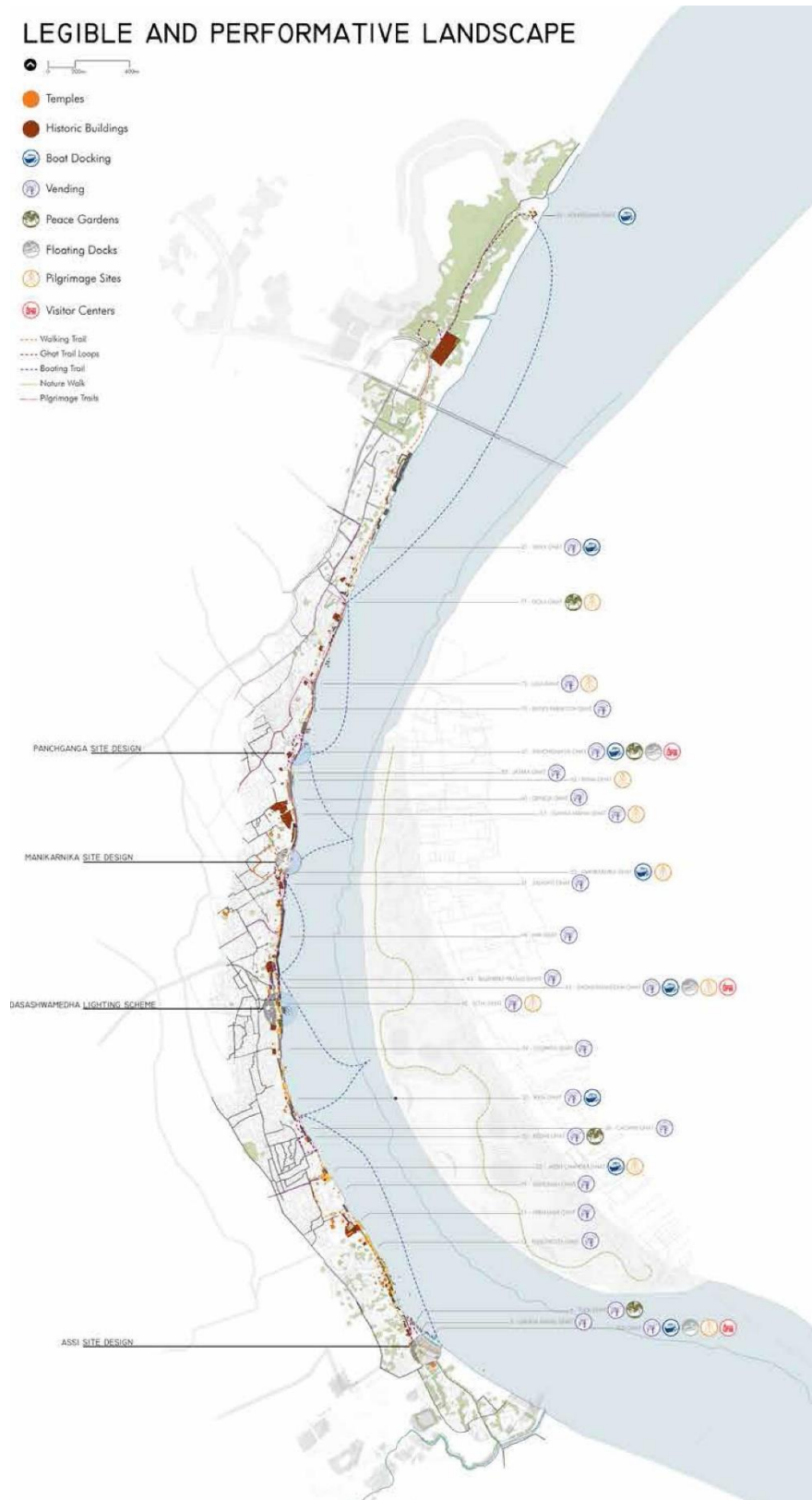


Figure 9: Legible and Performative Landscape

3.3.5 Master Plan

Ganga, the conventional river of purity washing away physical dirt and moral sins, is now polluted because of the large amount of waste generated at the ghats and by the city. Ritual worship and bathing, cremation, and sewage cause the Ganga water to be contaminated and a health hazard.

- The ghats in Varanasi are visualized as a healthy landscape by reducing point source pollution in the Ganga and creating a clean land-water interface through public sanitation programs and design prototypes such as non-polluting bathing tanks, compost gardens, bio-filtration basins, and ghat recycling center.
- Natural cleansing systems, such as wetlands and phytoremediation treat wastewater and increase biodiversity.
- Local composting and recycling are proposed to reduce the biodegradable waste.
- Bathing tanks are designed with bio-filtration basins for decreasing contaminants in the water, thus promoting the health of the river and of those who engage with it.
- Dumping sites near the ghats are reclaimed as waste management facility in a landscape of marshy lagoons for phytoremediation.
- The urban sanitation and composting programs should aim to limit river BOD (biological oxygen demand) to a safe level by 2030.
- Education through the use of on-site murals and other media to promote proper waste disposal and recycling will positively engage the community in ensuring a clean environment.

The Ganga is flooding more often because of deforestation upstream and constriction in its flow locally caused by silt deposition on the east bank. Frequent flooding negatively impacts the ghats and the city above them. Their resiliency, i.e. their ability to recover rapidly from disaster and prepare for as well as prevent future catastrophes from recurring, is increased through site planning and design.

- By reclaiming inland water bodies, and restoring Varana River and Assi Nala watersheds as greenways, resiliency of the urban landscape to cope with flood events is improved. In this ecological approach, on the northern stretch of ghats, planted edges and constructed wetlands are recommended.
- The width of the river is increased by silt removal thus allowing the rising waters to spread on the east bank. This shifting fluvial landscape is reclaimed as public space that can be used intensively in the dry season for recreational activities thus alleviating the stress on the ghats.
- Building wetlands that act as bio-filtration basins and planting memorial groves that recycle cremation ashes as fertilizer in sediment fills in upland areas stabilizes the landscape.

HEALTHY AND RESILIENT LANDSCAPE

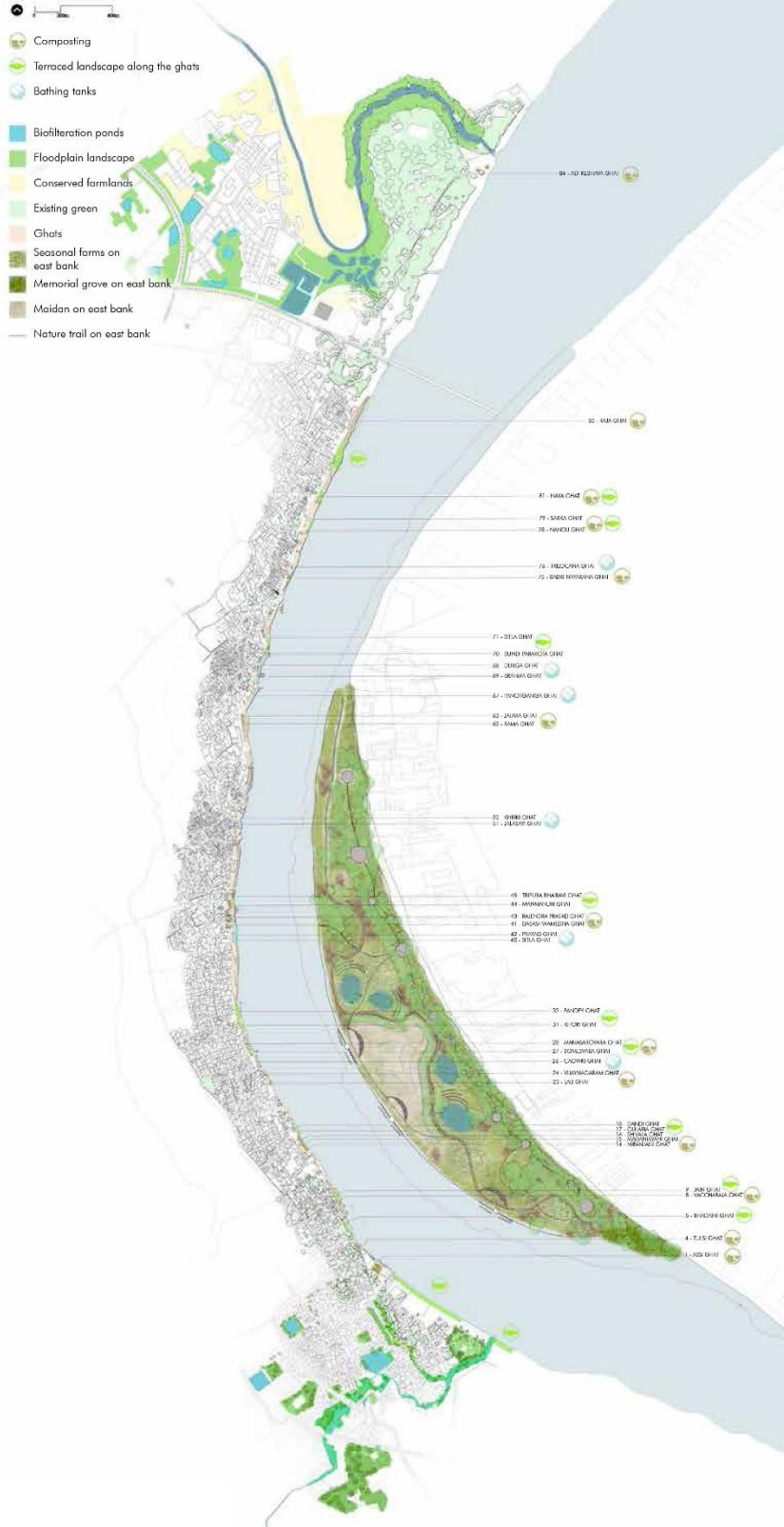


Figure 10: Master Plan of Varanashi

CHAPTER 4: STUDY AREA BHUBANESWAR

4.1 Introduction

Bhubaneswar, the capital city of Odisha is in public eye for many reasons. The city is the perfect blend of past perfectness and present digitalization. Well-known as the temple city is newly titled as the smart city of Odisha. The city has an international airport with flight connectivity to and from major destinations. Coordinates of Bhubaneswar city are 20.27°N 85.84°E. Bhubaneswar is situated in Khordha district in Odisha.

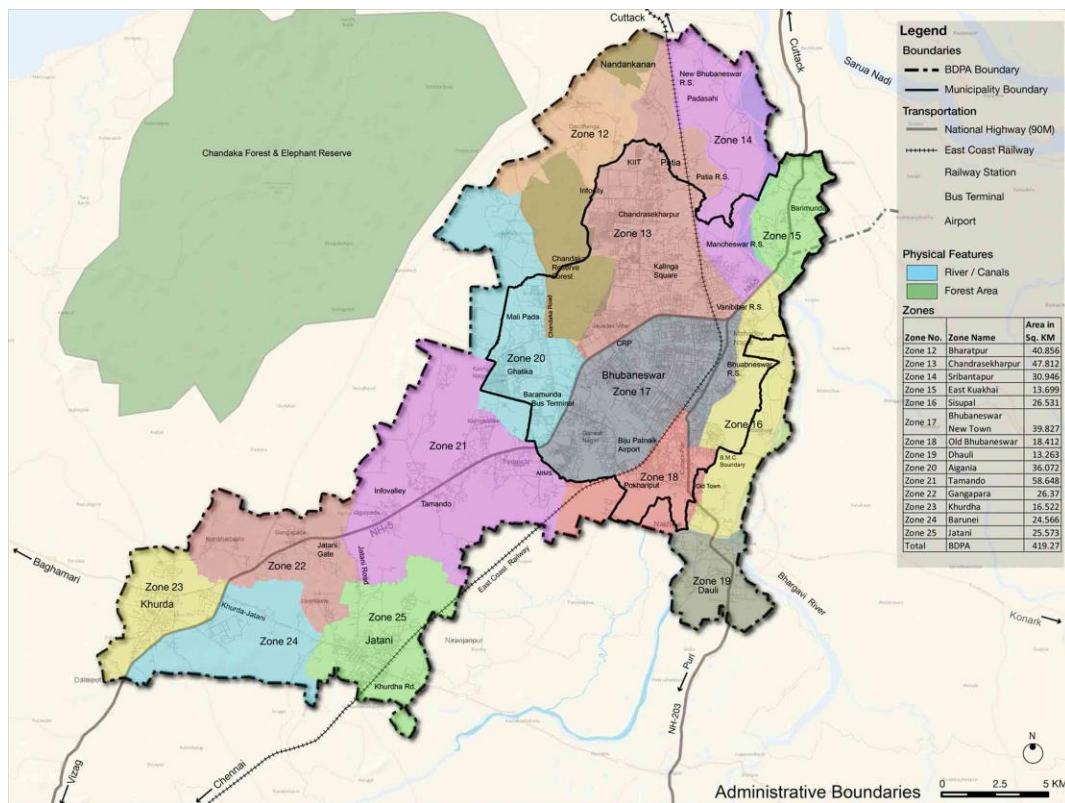


Figure 11: Administrative boundary of Bhubaneswar

4.2 Evolution of Bhubaneswar

This city watched some epic events in history. It was said that the Great Kalinga War was fought in this region which was transformation of great Emperor Ashoka from Chanda-Ashok to Dharma-Ashok accepting Buddhism. The city has witnessed the

making of various temples which sophisticated Orissan architectural works. Some of the temples are like Parsurameswar (7th c.AD), Vaital (8th c.AD), Mukteswar (10th-11th c.AD), Rajarani (11th c. AD), Brahmeswar (11th c.AD), and the Lingaraj temple complex (11th c.AD). Instead of these monuments, Bhubaneswar also has the oldest rock-cut caves in Khandagiri, Udayagiri which were once occupied by Jain monks. Dhauli where Ashokan inscriptions are engraved. Now, there is a Peace Pagoda constructed by the Japanese monks.

Bhubaneswar is the capital of state Orissa. The city has a history of over 3,000 years beginning with the Mahamegha-bahana Chedi dynasty (around the 2nd century BCE) which had its capital at Sisupalgarh, adjacent to the old Bhubaneswar city. Bhubaneswar was known as Toshali, Nagar Kalinga, Kalinga Nagari, Ekamra Kanan, Ekamra Kshetra and Mandira Malini Nagari ("City of Temples"). It is the major city in Odisha and is a focal point of economic and religious significance in Eastern India.

CHRONOLOGY OF BHUBANESWAR CITY (300 BCE-1949 AD)

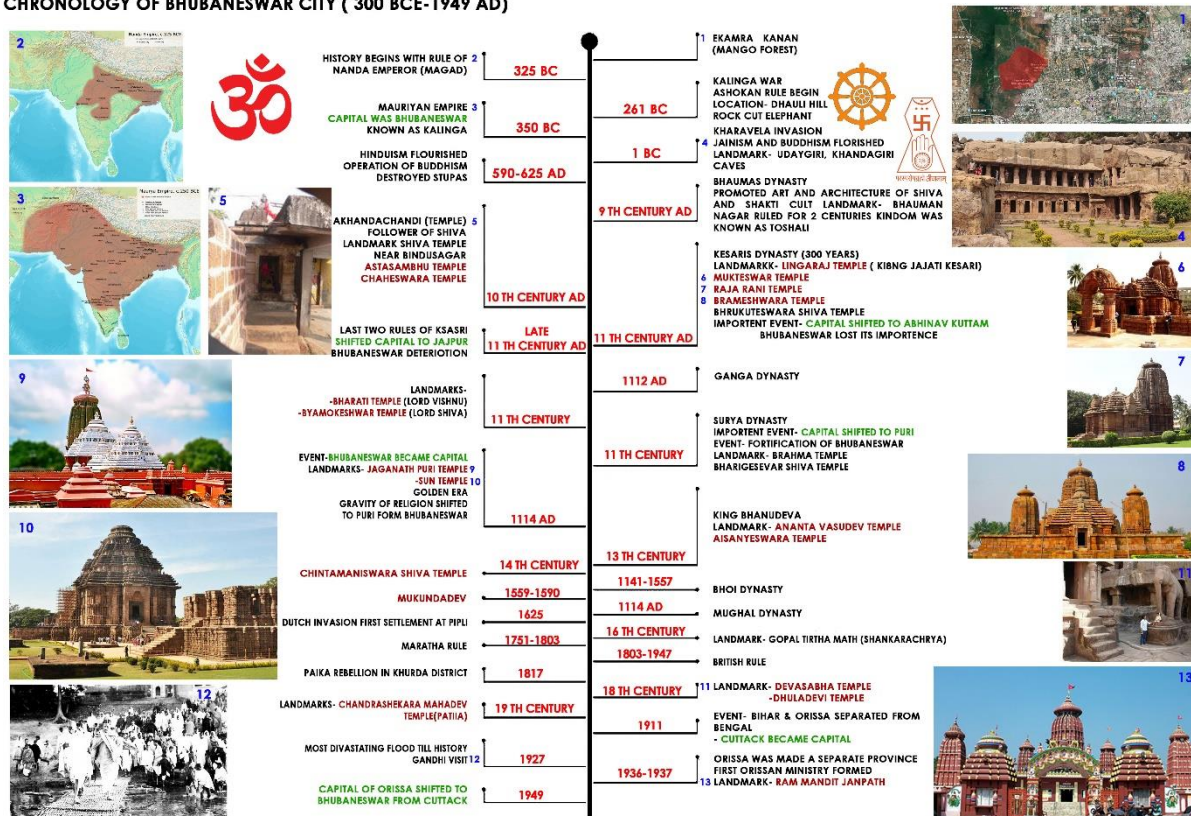


Figure 12 Chronology of Bhubaneswar city (300BCE-1949AD)

With so many Hindu temples, which contain all variety of Kalinga architecture, Bhubaneswar is frequently mentioned as a Temple City of India and together with Puri and Konark it forms the Golden Triange ("Swarna Tribhuja"). These three are one of most visited destination of eastern India. Bhubaneswar declare as capital fully in 1948. The modern city was planned by the German architect Otto Königsberger in 1946. Bhubaneswar was one of the modern India's first planned cities. Bhubaneswar and Cuttack are often referred to as the twin-cities of Odisha. Bhubaneswar is characterized as a Tier-2 city. A developing Information Technology (IT) and educational hub, Bhubaneswar is one of the fastest-developing cities in India.

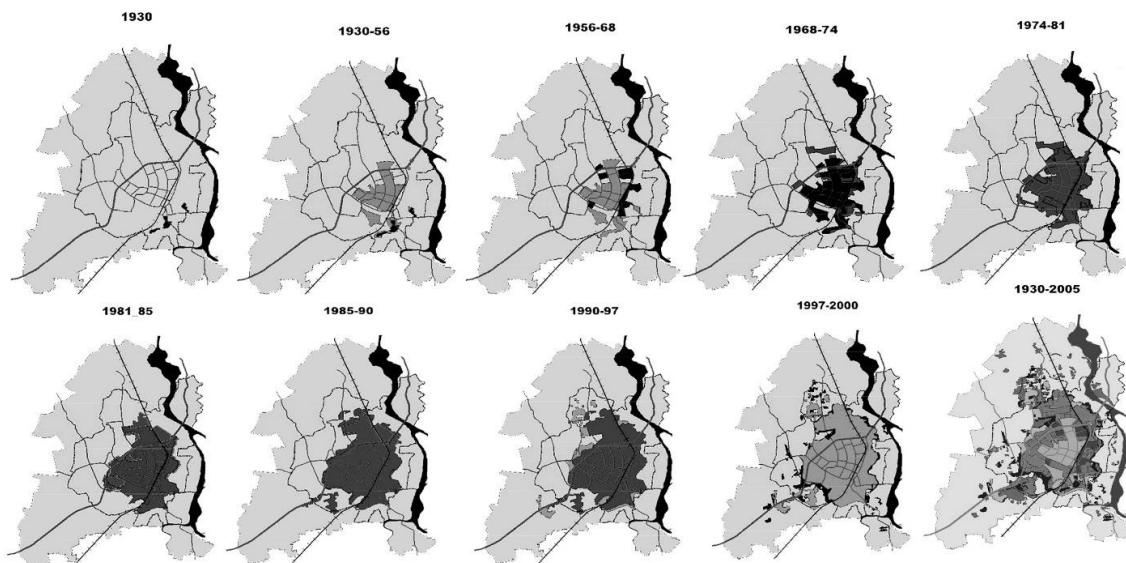


Figure 13 Chronology of Bhubaneswar city (1930-2005AD)

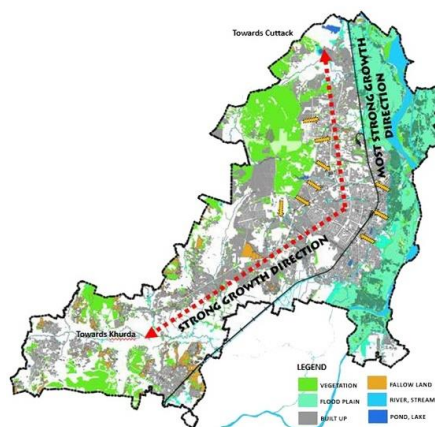


Figure 14 Growth of Bhubaneswar city

4.3 Demographic Profile

As per Census of 2001 the population of the Bhubaneswar to be nearly 647,302.

- 56% of the total populations are male
- 44% of total population are female.
- 10% of the total populations are below 6 years means children.
- The average literacy rate of Bhubaneswar is 79%.
- According to the 2001 census, Bhubaneswar is classified as a Class-I town.
- According to the present census, this urban complex constitutes 11.79% of the total state's urban population.

4.4 Social Profile

The city's significance in the State, in the Capital of Sub-Region and in the Golden Triangle of Tourism in Orissa has made this city an important hub of commercial, political, administrative and socio-cultural activities in the region. The table below presents the key socio-economic features of the Bhubaneswar City and their comparison with that of the urban Orissa. It may be observed that the city had better workers participation rate (33.30 percent) than that of the urban Orissa. Similarly, proportion of the main workers to total workers is better in the city than the urban Orissa. However, literacy rate and sex ratio in the urban Orissa is better than that of the city.

4.5 Tourist activity

The percentage shares of Bhubaneswar in the total domestic and foreigner tourist inflow in the state of Odisha are 17.5% and 37% respectively. The annual rate of growth of tourist arrivals have remained constant in the last decade.

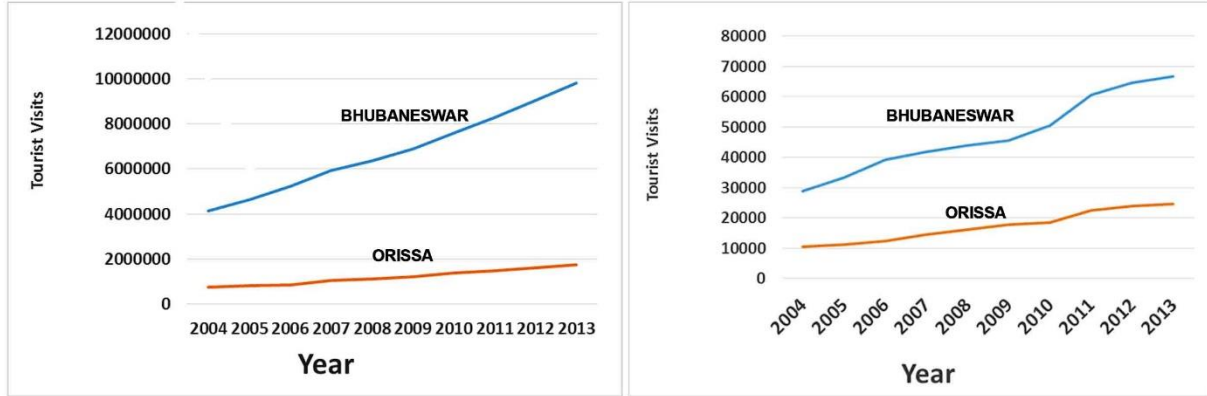


Figure 15 Tourist activity

The Domestic tourists use Bhubaneswar as a Transit point and average duration is 2-4 days. Foreign tourist prefer to stay for longer period of time as compared to Domestic tourists. Some Foreign tourists come to Bhubaneswar to learn Odissi Dance and other art forms for which reason the duration of stay has exceeded 6 days in some cases.

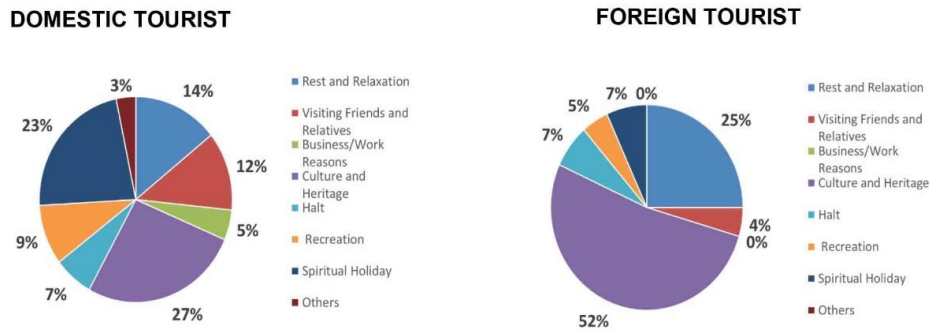


Figure 16: Domestic tourist and foreign tourist activity

Domestic and Foreign Tourists mainly come for Culture and Heritage, Rest and Relaxation. The tourists going to Puri contribute to the Spiritual Holiday in Bhubaneswar.

4.6 Regional Boundaries

. It is located in the eastern coastal plains, along the axis of the Eastern Ghats Mountains. The city has an average altitude of 45 m above sea level and in southwest the Mahanadi River that forms the northern boundary of Bhubaneswar within its delta. The

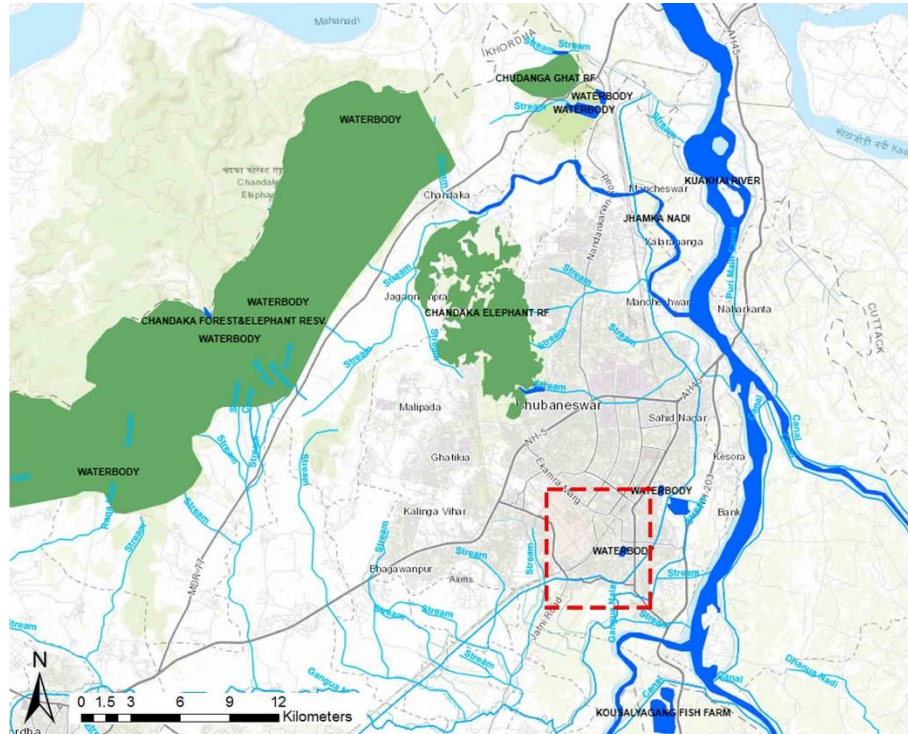
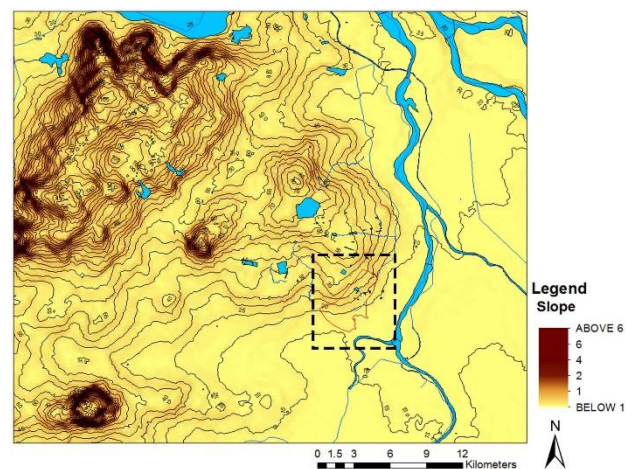
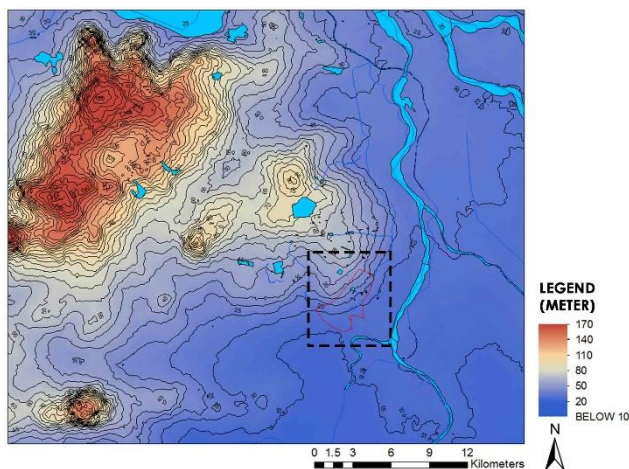
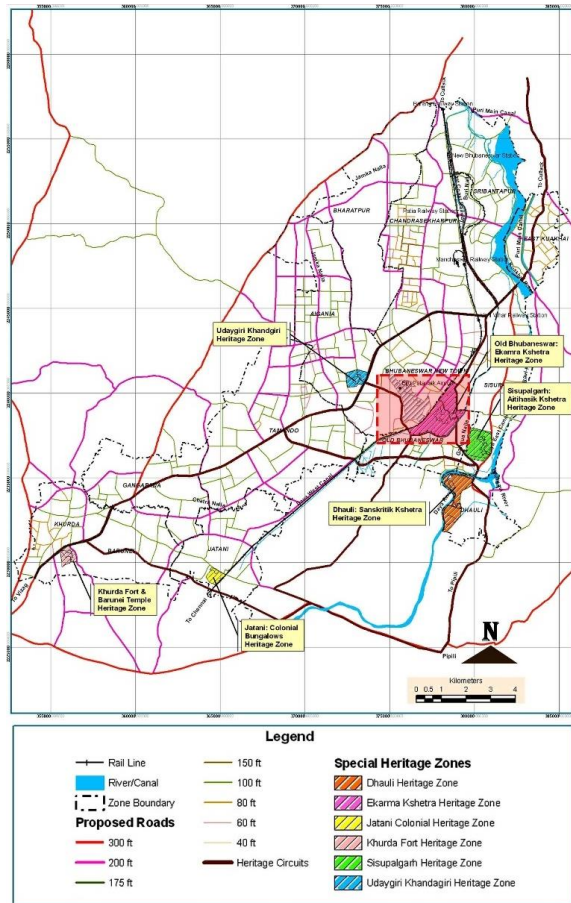


Figure 17: Regional boundaries

city is surrounded by the Daya River in south and the Kuakhai River in east, the Chandaka Wildlife Sanctuary and Nandankanan Zoo are in western part and northern parts of Bhubaneswar respectively.



4.7 Bhubaneswar development plan 2030



BDPA (Bhubaneswar Development Plan Authority) area is contained with varied historical and cultural resources from different historical periods. Of the innumerable historical structures and precincts, mainly six areas emerge as most outstanding and deserve special attention in Bhubaneswar development plan 2030. They are -1) Ekamra Kshetra, a living heritage city, 2) Dhauli, 3) Udayagiri and Knandagiri - the Win hill or renowned cave temples, 4) Sisupalagam, the ancient palace of capital of Kalinga, 5) Khurda, the last independent fort of India and 6) Jatani - an example cultural and colonial heritage.

It is suggested in the master plan that the following areas are declared as Special

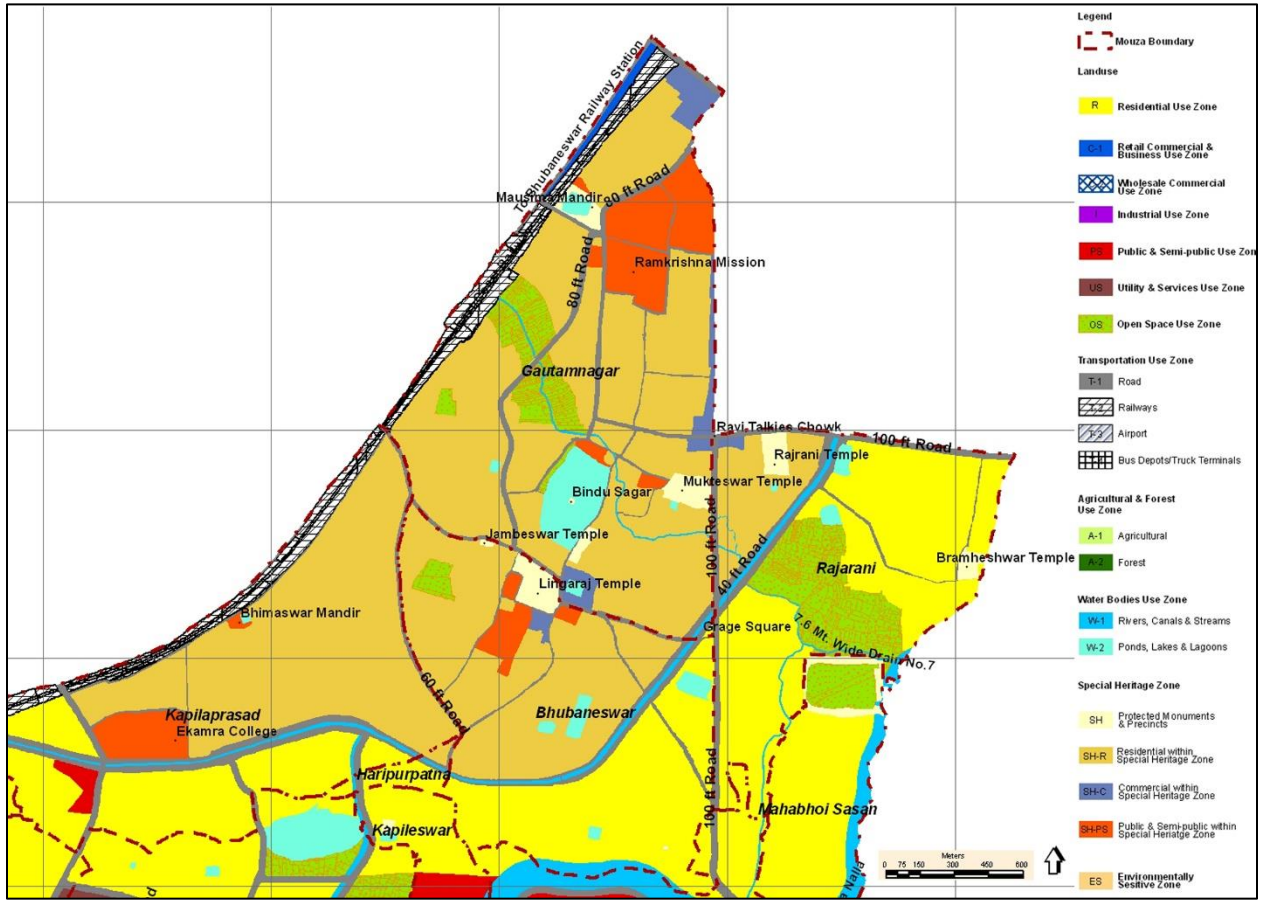
Heritage Areas like Ekamra Kshetra (Zone 18), Sisupalagam and its surroundings as Ajtinasik Kshetra (Zone 16), Dhauli and its surroundings as Sanskritik Kshetra (Zone

19), Udayagiri and Khandagiri (Zone 20), Khurda Fort and Barunei (Zone 24), Cultural and Colonial Heritage at Jatani (Zone 25).

So, old Bhubaneswar area which is known as Ekamra Kshetra, now proposed as A spatial heritage zone.

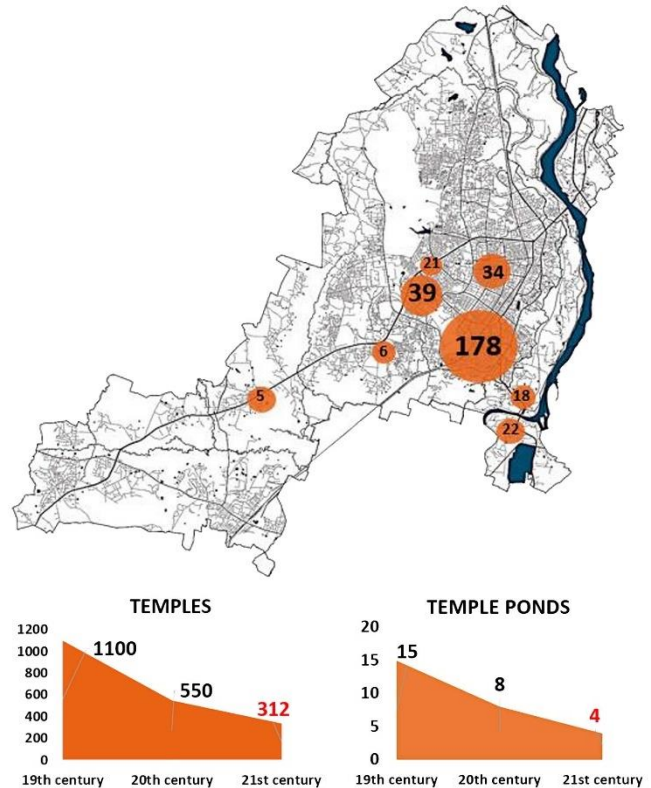
Ekamra Kshetra Heritage Zone must continue to be a living heritage with scope for accommodating new activities and development that are conducive to predominant activity of a temple town. Delineation is based on the basic principle to revive the astha-ayatana concept.

4.8 Proposed land use map of Ekamra Kshetra Heritage Zone



4.9 Impact of urbanization on Sacred Temples and Tanks of Bhubaneswar

The EKAMRA HERITAGE ZONE area which belongs to the Pre Independence time is now the Old City Area of the capital metropolitan city entangled in network of problems. Bhubaneswar has been known as mandir malini, a place garlanded by temples. But Of 7000 only 318 survive. The Graph below shows the decline in temple and temple ponds. The tanks such as Bindusagar, Devipadahara Tank, Kapilesvara Tank were attached with religious symbolisms and considered Today, this zone faces large number of problems such as lack of sanitation, haphazard housing condition, poor built infrastructure, congestion and facing current issues of loss of heritage. Today, this zone faces large number of problems such as lack of sanitation, haphazard housing condition, poor built infrastructure, congestion & facing current issues of loss of heritage.



CHAPTER 5: ECOLOGICAL DATA

5.1 Climate

The summer season is very hot in Bhubaneswar. The average maximum temperature is going above 40° Celsius. The winters in Bhubaneswar are not very cold and the place gets relief from the hot climate during monsoons season. The summer of Bhubaneswar starts in March and stretches till end of June. The maximum temperature goes above 45° Celsius. The monsoon season starts in July and lasts till October. The city gets nearly 1450 mm of rainfall annually. The weather in this season is relatively pleasing, though it may be a little sticky because of the high humidity. In the mid October, southwest monsoons withdraw from this region entirely. The coastal areas of the state regularly experience cyclone and tornado during this season.

Summer - March to May	
Average Maximum Temperature	36° C
Average Minimum Temperature	25° C
Average Precipitation	40 mm
Winter - November to February	
Average Maximum Temperature	28° C
Average Minimum Temperature	16° C
Average Precipitation	23 mm
Monsoon - June to October	
Average Maximum Temperature	32° C
Average Minimum Temperature	25° C
Average Precipitation	220 mm

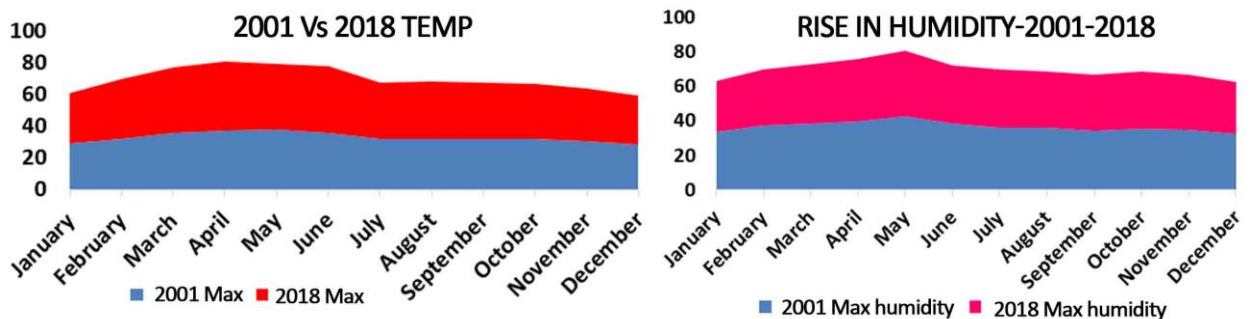


Figure 19: Temperature and Humidity changes in last 18 years

5.2 Geology, Geomorphology and Soil

The western part of the Bhubaneswar is high land with hard soil and permits growth of forests whereas the eastern part is low with alluvial soil and can be considered as suitable land for agricultural purposes. The general soil condition is hard. Laterite stones are noticeable at some places on the surface

- Bhubaneswar and its environments is located on a lateralized upland which is fringed by alluvial plains in the east and small sandstone ridges in the north-west.

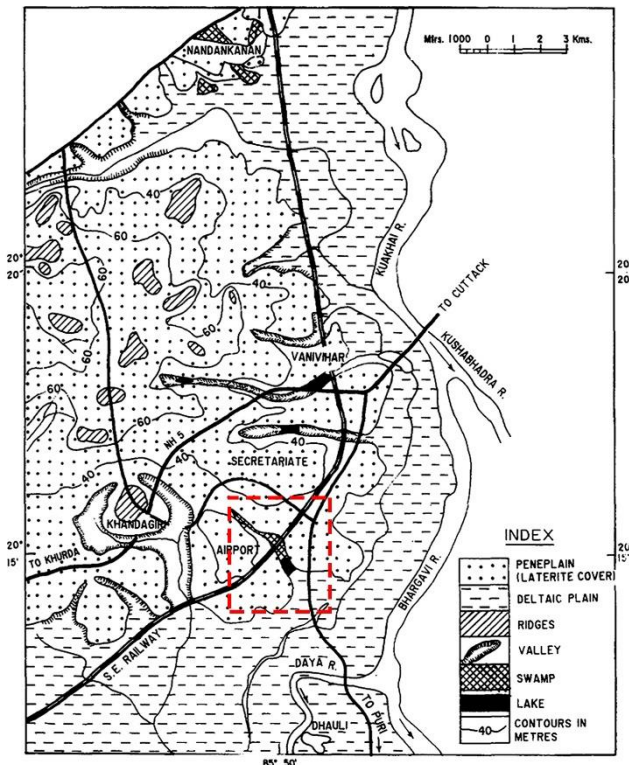


Figure 20 Geomorphology of Bhubaneswar (Mitra, n.d.)

- Nearly 65% of the land made of lateralized pedepain, 25% of its alluvial plain and only 10% land is composed of sandstone ridges.
- The lateritic pedepain has a height varying from 20 m to 60 m above the mean sea level.
- The average ground slope in this area is between 1:60 to 1:20. The alluvial plains lie 20m below the ground.

5.3 Hydrology

The surface of Bhubaneswar region is dissected and drained by a radiating system of nallas and streams discharging into main rivers like the Kuakhai, Bharagavi and Daya surrounding the Bhubaneswar City region. The undulating surface with a number of nallas (generally dry all along the year except in the rainy season from July to September) breaks the monotony of the lateralized landscape. Among those nallas are linked with natural underground springs, which are used as the sources of fresh water for many areas.

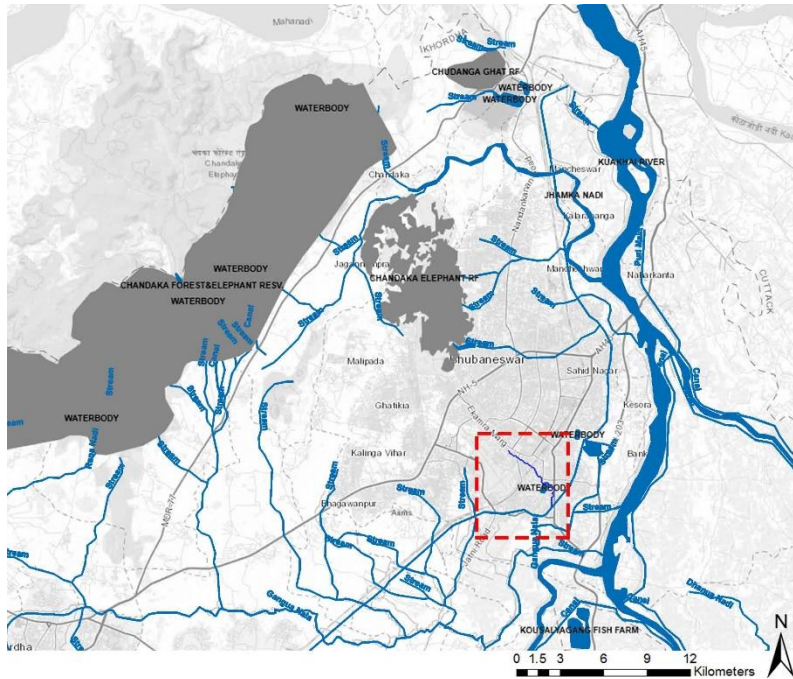


Figure 21: Hydrology and drainage of Bhubaneswar region

5.4 Vegetation

Floral diversity of this area are

- semi- evergreen forests,
- deciduous forest
- thorny bamboo brakes (*Bambusa bambos*),

Main tree species are Kalicha, Kochila, Bel, Kangada, Sunari, Giringa, Sal, Karanja, Kumbhi, Jamu, Karanja, Teak and Sidha. Male bamboo (*Dendrocalamus strictus*). Common medicinal plants are also available in this area. They are like Baidanka, Duramari, Brudhadaraka, Bhuinlimbo, Salparni, Guluchi lata, Satabari, Indrajaba, Thalkudi, Bhuin-kakharu, Apamaranga, Patalgaruda, Kurchi etc. Some

species of ground Orchids, Club mosses, Ferns, Bryophytes and Lichens are also seen in this region. Moisture loving plant like Eucalyptus (Eucalyptus sp.), casuarina (Casuarina equisetifolia), dalbergia (Dalbergia sissoo), banana (Musa sp.) are also very common in this area.

CHAPTER 6: SACRED LANDSCAPE OF EKAMRA KSHETRA

6.1 Introduction

The center of Ekamra Kshetra was consist of Lingaraj temple . The old town of Bhubaneswar itself surrounding the sacred Bindusagar Tank in the vicinity of Lingaraj Temple. The town structure was based on the Mandala concept. The sacred tanks like Bindusagar, Devipadahara Tank, Kapilesvara Tank were associated with many religious symbolisms and considered as holy tank. Many ancient stone temples are existed in this old town area which vary in size from the gigantic structures like the Lingaraja temple, to the miniatures of a few feet in height are located along the banks of the ancient tanks. The region, in which the living temples are distributed, spreads over 10 miles and are proof of historic significance of Bhubaneswar city.

6.2 Myth and histories behind this town

Ekamra Kshetra covers the area of the old city of Bhubaneswar that forms the centre of this famous temple architecture and is recognized as a Hindu holy city.

- The name Ekamra is mentioned in the Anantavasudeva Inscription of Paramarddi of 1200-1278 A.D “the province of Utkala where the holy place of Ekamra located surrounded with many mango-groves, where exists a single Devakula (temple) surrounded by numerous temples. This epigraph defines "the holy place called Kshetra of Ekamra devoted to god Kritivasa, recognized for presenting heavenly achievements and always decorated with flowers of every season”.
- The Brahmeswar Inscription of Udyotakesari Mahabhavagupta IV also mentioned the Ekamra as Siddhakshetra.
- As per Ekamra Purana, a 13th-century Sanskrit documentn, it is believed that this sacred kshetra was a Panchakrosa (10 miles) in circumference bordered by Khandagiri hills in the west, Kundalesvara temple in the east, Balhadevi Temple on the north and Bhirangesvara temple near Dhauli on the south, with Lingaraj Temple as its centre. It is also described that there was an inner circle to this Kshetra bound by Meghesvara temple in the east and Sundaresvara temple in the south.

- Ekamra Kshetra comprised of 45 villages and was divided into asta-ayatana or eight sacred precincts, each with its water body, temples, small shrines, tirthas and prescribed pilgrim/ritual procession routes that are ritualistically and symbolically connected to the Lingaraj Temple.

6.3 Temples of Ekamra Kshetra

Dynasty I

The earliest group of temples have been dated to 575 ad. it was Sailadbhavas(575-700 ad) of the Kongoda mandala who initiated the temple building activities in Bhubaneswar.

- Lakshamneswara group of temples
- Svarnajaleswara
- Parasurameswara
- Small temple inside the Yameswara compound

Dynasty II

After the sailodbhavas the bhubaneswar area came under the control of the bhaumakaras, who started their rule from 736 ad to 930 ad in coastal district of orissa.

- Mohini
- Markandeswara
- Sisireswara
- Vaital
- Temple inside Bhavani sankar complex
- Veleswara temple
- Shiva temple (Paramaguru compound)
- Vimalleswara temple

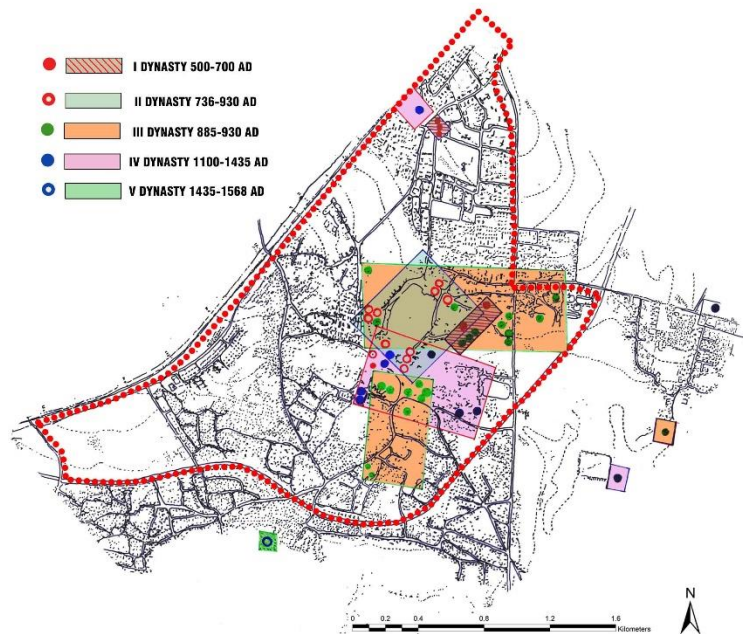


Figure 22: Dynastic progression of Temples of Old town

Dynasty III

The Somavamsis the next important dynasty who started their rule in western Orissa about 885ad and occupied the costal districts by 930ad.

- Mukteswara temple
- Gouri- devi temple
- Sampurnajaleswara temple
- Ekamreswara temple
- Dakara bhimeswara temple
- Rajarani temple
- Manibhadreswara temple
- Brahmeswara temple
- Kotitirtheswara temple
- Kedareswara temple
- Siddheswara temple
- Chakreswara temple
- Suvarneswara temple
- Paradarswara temple
- Sureswara temple
- Pataleswara temple
- Gangeswara temple
- Yamuna temple
- Shyameswara temple
- Nilkantheswara temple
- Daityaswara temple

Dynasty IV

By 1100 ad Anatarvarman Chodaganga of the imperial ganga dynasty, ruling from Kalinga Narara, occupied Utkal coastal district of Puri, Cuttack and Balasore. There are number of Ganga monuments at Bhubaneswar erected during their rule from about 1100 ad to 1435 ad.

- Rameswara temple
- Mhaskareswra temple
- Parvati temple (inside Lingaraj temple)
- Yameswara temple
- Chitrakarini temple
- Ananta vasudeva temple
- Sari deul
- Suka-sari temple
- Kainchi temple
- Siva temple (south of hospital)

- Devi temple
- Purbeswara temple
- Gokarneswara temple
- Varuneswara temple
- Bakeswara temple
- Makareswara temple
- Lakshmiswara temple
- The natmandira and bhogmandapa of Lingaraj temple
- Mitreswara temple

Dynasty V

After the Gangas, the suryavamsis came to power. They were not great builders.

- Papanashini matha
- Kapileswara temple



VAITAL DEUL



RAMESHWAR TEMPLE



MUKTESWAR TEMPLE



PARASURAMESWARA TEMPLE



BRAHMESWAR TEMPLE



MEGHESWARA TEMPLE



ANANTA VASUDEV TEMPLE



BINDUSAGAR TANK



SIDDHESWARA TEMPLE



PAPANASINI TEMPLE



LINGARAJ TEMPLE



CHITRAKARINI TEMPLE



KAPILESWARA TEMPLE



BHASKARESWARA TEMPLE



RAJARANI TEMPLE

Figure 23: Temples of Ekamra Kshetra

6.4 Sacred Tanks and Stories behind them

According to ancient scriptures, deities reside near a clean water body. A temple therefore should be built in the front or left. In Vedic Period, a water body was compared to a cow, the symbol of wealth, fertility and prosperity. It was believed that water goddesses had the ability to cleanse and purify the worshippers from moral sins and bestow long life, wealth and immortality. As years went by, Kshetra and Tirtha became essential elements of Hindu pilgrimage and wisdom.

According to traditional Hindu belief, life is nothing but a pilgrimage, which does not end with death as it does not bring the final release (Moksha).

Tirtha is a place of pilgrimage situated on the bank of a river, sea shore or lake. Water, the purifying and fertilizing element is the essence of a Tirtha and bathing in it reinforces inner realization. Hindu beliefs also say that, Tirthas are the pleasure gardens of gods where they are engaged in eternal play. Therefore, a temple is built near a water source and if there is none then a tank / pond is built near it. This was our ancestor's way of ensuring consistent supply of water that could be drawn upon in times of drought. Many water bodies in an area would mean increased water table and the tanks would also act as rain water harvesting structures. By declaring the waters sacred, it was ensured that they remained clean and potable. An ingenious way of managing water resources.

Bindu Sagar is the largest holy tank in Bhubaneswar. Rectangular in plan 450 m in length, 175 m in breadth and 7 m in depth. It was built between 7th – 8th century CE. Bindu Sagar, the largest sacred tank in Bhubaneswar. At the middle of Bindu Sagar, there is a pidha shrine that is locally known as Jagati. During Chandan Yatra festival associated with Lord Lingaraj held in the month of May, the Lord visits the shrine on a boat.

Parvati felt thirsty after killing the demons and to satisfy her thirst lord Shiva struck his trident from where a spring rushed forth. A masonry tank was built around the spring waters which was sanctified by mixing it with the waters of all rivers and streams of India. This tank is the Bindu Sagar.



Figure 24: Religious association with Bindusagar tanks

Throughout the year, on the banks of Bindu Sagar, local residents carry out special rituals called 'Tarpan'. Family members offer food and prayers in the belief that the departed souls will have a smooth transition to heaven. Pind are balls made of rice flour, wheat, sesame seeds, honey and milk. Seven pinds are made and offered to the departed souls during the Shraddha.



Figure 25: Devi Padahara tank

Devi Padahara Tank in front of Lingaraj Temple with 108 miniature Shiva temples around it. Apart from Bindu Sagar, Bhubaneswar has many other holy tanks that are attached to many temples. One of them is the Kedar Gouri kund located beside a temple of Kedar-gauri temple. It is believed that a single sip of water from this tank frees oneself from the repeated cycles of birth and death. The waters of Marichi kunda, attached to the nearby Mukteswar Temple is said to bestow fertility. Barren women hoping to give birth to sons take a dip in this tank on the night before Ashokashtami that is celebrated during Chaitra Navratri.

Another significant sacred tank is the Manikarnika Tank. As per legend, fighting with the demons Kirti and Vasa Goddess Parvati lost her mani-kundala (earrings). The tank from where the earrings were recovered is known as Manikarneswara kunda (tank).

Kotitirtha is another tank that is revered among locals as a sacred place for washing their sins. The tank is used for several ritual practices like offering pind daan (funeral rituals) and is also a Panchatirtha (five holy places), the other four tirthas are Bindusagar, Ganga-Yamuna, Devi Padahara and Papanasini tanks.



Figure 26: Godavari tank, Marichi kund, Brahmewar temple tank, Kotitirtha tank, Papanashini tank and Kedar-gauri tank respectively

According to a legend, a Sage named Sajoti accomplished severe penance here withdrawing from food and water. Pleased with his penance when Lord Shiva appeared then the sage wished to Lord Shiva for a kunda (tank) that would wash the sins of human beings. Lord Shiva created this tank which is known as Papanasini.

Today, with rapid urbanization and commercialization, some of the sacred tanks of Ekamra Kshetra have lost their purity. What once used to be waterbodies of immense medicinal value are now filthy and polluted. Steps need to be taken urgently to revive and retain these tanks in their pristine condition. Ekamra Kshetra is now a part of Smart City but it could not manage its water resources smartly.

6.5 Asta Ayatana of Ekamra Kshetra (Ekamra Purana, n.d.)

The Ekamra Purana described in its four parts and fifty one chapters all the tirthas, temples, legends and importance of each shrine found at Ekamra kshetra. It described in the eleventh chapter that the presiding deity of Ekamra kshetra is Kritivasa who is the head of asta-ayatana of Ekamra Kshetra are described in chapter eight to eighteen. The Ekamra Chandrika has the description of the eight sacred complexes or asta-ayatana kshetra in fifth to eighth chapters. These eight centers are actually

clusters of sacred ponds and shrines the number of monuments include in the Asta-ayatana are fifty four.

According to the Ekamra Chandrika the ayatana as follows:

- **First Ayatana**
 - Bindu sarvar
 - Ananta Vasudeva
 - Devi Padahara
 - Tirtheswara temple
- **Second Ayatana**
 - Kapila kund
 - Papanashini kund
 - Maitreswara temple
 - Varuneswara temple
 - Venu-Kichaka temple (Kaichi temple)
 - Isaneswara temple
 - Punarisana temple
 - Yameswara temple
- **Third Ayatana**
 - Ganga-yamuna kund
 - Gangeswara temple
 - Yamuneswara temple
 - Devipada temple
 - Lakshmiswara temple
 - Kotitirtha sarvora
 - Koriswara temple
 - Savarnajaleswar temple
 - Sampurnajaleswara temple
 - Sureswara temple
 - Siddheswara temple
 - Mukteswara temple
 - Shiddha kund
- **Forth Ayatana**
 - Kedareswara temple
 - Gouri kund
 - Gouri Devi temple
 - Kedar kund
 - Santa siva temple

- Daityaswara temple
- Disiswari temple
- Indreswara temple (Rajarani temple)
- **Fifth Ayatana**
 - Brahma kund
 - Brahmeswara temple
 - Gokarneswara temple
 - Utpalekeswara temple
- **Sixth Ayatana**
 - Mesga tirth temple
 - Megheswara temple
 - Bhaskareswara temple
 - Kapalamochanswara temple (lost)
- **Seventh Ayatana**
 - Atavu tirtha temple
 - Atavukeswra temple
 - Uttareswara temple
 - Bhimeswara temple
- **Eighth Ayatana**
 - Rama kund
 - Rameswara temple
 - Laksmaneswara temple
 - Bharateswara temple
 - Satrughmeswara temple
 - Gosahagreswara temple
 - Paradareswara temple

The pradashina of the Asta-ayatanas consisted of the pilgrim routes inside the Ekamra Kshetra.

Since, Ekamra Purana has the description of Asta-ayatanas we can presume that these eight clusters of temple and ponds were already considered as sacred places much before the date of the Ekamra Purana (15th-16th century AD).

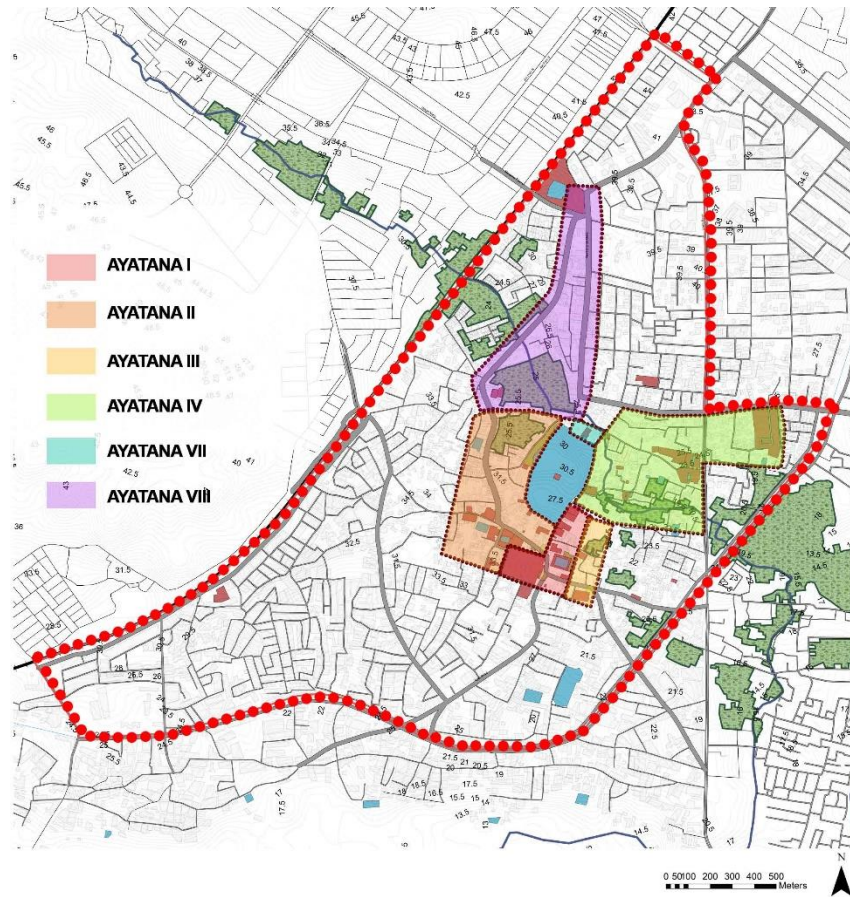


Figure 27: Six ayatana among Asta-ayatana of Ekamra Kshetra

Only six ayatana comes inside boundary of my study area among these eight ayatana.

6.6 Architype of Temples of Ekamra Kshetra

Architecturally, the temple of Ekamra Kshetra are the examples of well-preserved Orissan temples. Orissan temples can be categorized into three main orders, well-known to local terminology as rekha deul, pidha deul, and khakhara deul.

- Usually in Orissan temples, there are rekha and pidha go almost side by side and form spaces for deity and ritual worship, the pidha deula is meant for worshipers, where the pilgrims may wait, meditate, or read. Another two pidha deulas were added in the fully developed form, well-known as natamandira (festive hall) and bhogamandapa (hall of offering).
- The khakhara order is associated with mother Goddess and Shakti cult.
- The builders of temples of Orissa are several ancient scripts to guide them in planning and execution of a temple construction. Some of these famous texts

are Bhubanapradipa, bhuvanapravesa, sipasastra, silpipothi, sudhikagama, Vastu sutra, Silpa prakasa, Silpa Ratna Kosa, upanisad, silpa Sasrini, Baya Chakada, Deula-mapagunagara etc. Indicating the standard accomplished by our ancestors in the field of temple architecture.

- **Rekha Deula:** The rekha style is symbolized by the main temple called vimana in which the deity is placed called Garbhagriha. It is known as rekha deula also known as badadeula. The body of all the Orissan temples can be divided into four principal parts vertically, they are the pista (the pedestal), the bada (the wall, the gandi or the body) and the mastaka (the crown). The temple symbolically compared with body of a man (purusha) with such parts.
- **Pista:** The pista is not an essential part of the temple properly. The temples of any significance are generally have plinth. For typical case we can say Lingaraj temple is complete type of Orissan in majestic scale.

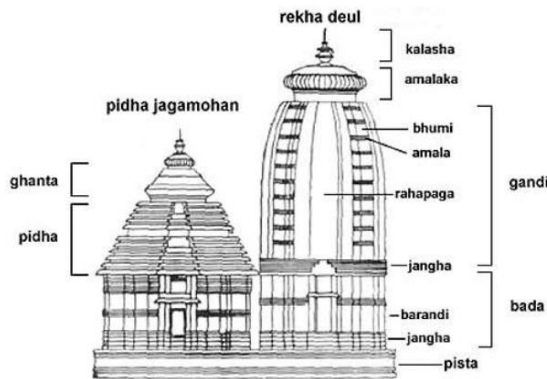


Figure 29 Principal parts of Orissan temple elevation

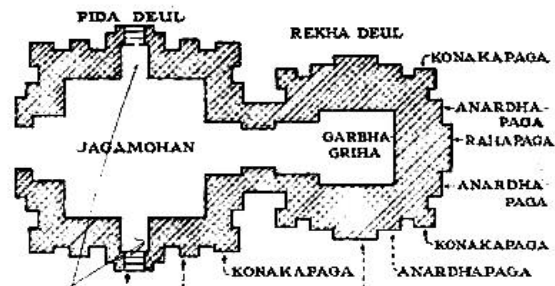


Figure 28 Principal parts of Orissan temple plan form

- **Bada:** Above pista the next section is bada. Bada raises upto a certain height; bada is composed of a number of broad division, which is capable of being resolved into a number of fine elements. The elements of the bada are the pabhaga (the base), the jangha (the shin and the baranda), which is actually a set of moldings crowning the bada. In the later time temples, the bada extended height with the division of the jangha into parts they are tala jangha and upara jangaha with a set of moulding known as bandhana. Three-segmented bada is acknowledged as trianga while the five-segmented bada is well-known as panchaga bada.
- **Gandi:** The gandi or the elliptical tower rises from the edge of the bada. The gandi is divided into a number of pagas by the continuation of the projection of the bada.
- **Mastake:** The top most part of the deula is known as mastake. It has a number of elements that form crown of the deula. The recessed segment immediately

above the gandi is called beki or kantha. The flattened spheroid ribbed at the edge above the beki is recognized as amla sree, amla and amalaka sila.

- **Ground Plan:** Ground plans for both rekha deula and jagmohana are square or rectangular in any Orissan temple. Orissan architectural texts described that a shrine devoted to siva or Vishnu should be square in plan while a shrine dedicated to Devi should be in rectangular form.
- **Materials:** The temples of Orissa were mostly made of sandstones. Sandstone's small grain, homogenous texture and great firmness allowed the artesian delicate carving without causing any damage. But as laterite is easily available material in whole Orissa which was used for the foundation, outerwall, porticos and all structures of secondary importance. In addition laterite, chlorite, khandolite, granite were also usually used in temple-building.

6.7 Local culture and art

There are a large variety styles in sculpture and temple architecture. The orissan artists have still reserved that wonderful tradition of stone carving. These stone curvings has created their importance in the history of art of India. Starting to miniature to life size sculptures and temples with numerous excellent carvings have been our magnificent traditions. Illustrated tradition is also part of Orissan art. The paintings which are more antique and indigenious in style. This indigenious tradition is still stay alive at the hands of Chitrakaras (traditional painters) in Puri, Chikiti, Raghurajpur, Paralakhemundi, and Sonapur. These paintings represents a dynamic style with bold lines and bright colours which are quite charming to the eye. These are called Patta Chitras. These are based on mythical themes and stories from Radha-Krishna Lila and Lord Jagannath. It contains folk elements in its style and implementation. Apart from this Saura tribal painting has a difference of its own. One may say that the painting tradition in Orissa which began with the pre-historic rock paintings is still in trend with all its greatness and passion.

The illustrated manuscripts of palm leaf of Orissa is another very excellent and important section of the Indian history of pictorial art. The applique craft of Pipili is most popular for its designs, its colours, and fabrics and artistry among the traditional crafts of Orissa. Horn craft and Metal casting method for beauty and utility is the most famous traditional craft of Orissa. The idols of Gods and Goddess, lamp stand, utensils and decorative pieces etc. give you an amazing impression of creative impulses.

CHAPTER 7: CULTURAL HERITAGE

7.1 Introduction

There are many activity like daily rituals, festivals, fair etc celebrated in this precinct. So, tourist and pilgrimage influx is also varied.

7.2 Daily Ceremonies

Lord Lingaraj is the main figure in the temple community and whatever is done to him every day is considered to be the day to day affairs of this community. In addition to the daily ritual cycle there are weekly and fortnightly festivals called the “Sombar Bedha”(Monday festival) and the “Ceaturdashi Bedha”(Fourteenth day festival) respectively. The former festival is held every Monday and the later every fourteenth day in each fortnight i.e. the day before the new moon and day before the full moon.

7.3 Festivals

Apart from weekly and fortnightly festivals, there are 14 major festivals(Yatras) and 7 minor festivals (Upa-yatra) in annual ritual cycle.

	JAN-FEB	FEB-MAR	MAR-APR	MAR-APR	APR-MAY	MAY-JUN	JUN-JUL	JUL-AUG	AUG-SEP	SEP-OCT	OCT-NOV	NOV-DEC	DEC-JAN
FESTIVALS	MAKAR SANKRANTI: SPATIAL DISH FOR LINGARAJ	SHIVRATRI	DOL PURNIMA	ASHOKASTAMI	AKSHYA TRITIVA	SITALA SASTHI: MARRIGE OF SHIVA	PARSURAM ASTAMI	PABITRAROPAN	YAMA DWITIVA	DURGA ASTAMI		PRATHAMASTAMI:FIR ST FESTIVAL	PUSYAVISEKA: GREAT BATH RITUAL
	MAGAHA SAPTAMI: FAIR	BANG YATRA		DAMANAKA CHATURDASHI: EVENING FOOD OFFERING			SAYAN CHATURDASHI		UTHAPANA CHATURDASHI			PRAVANA SASTHI: DERRING RITUAL	
	SARASWATI PUJA								JANMASTUMI				
	BHOURI EKADASHI												

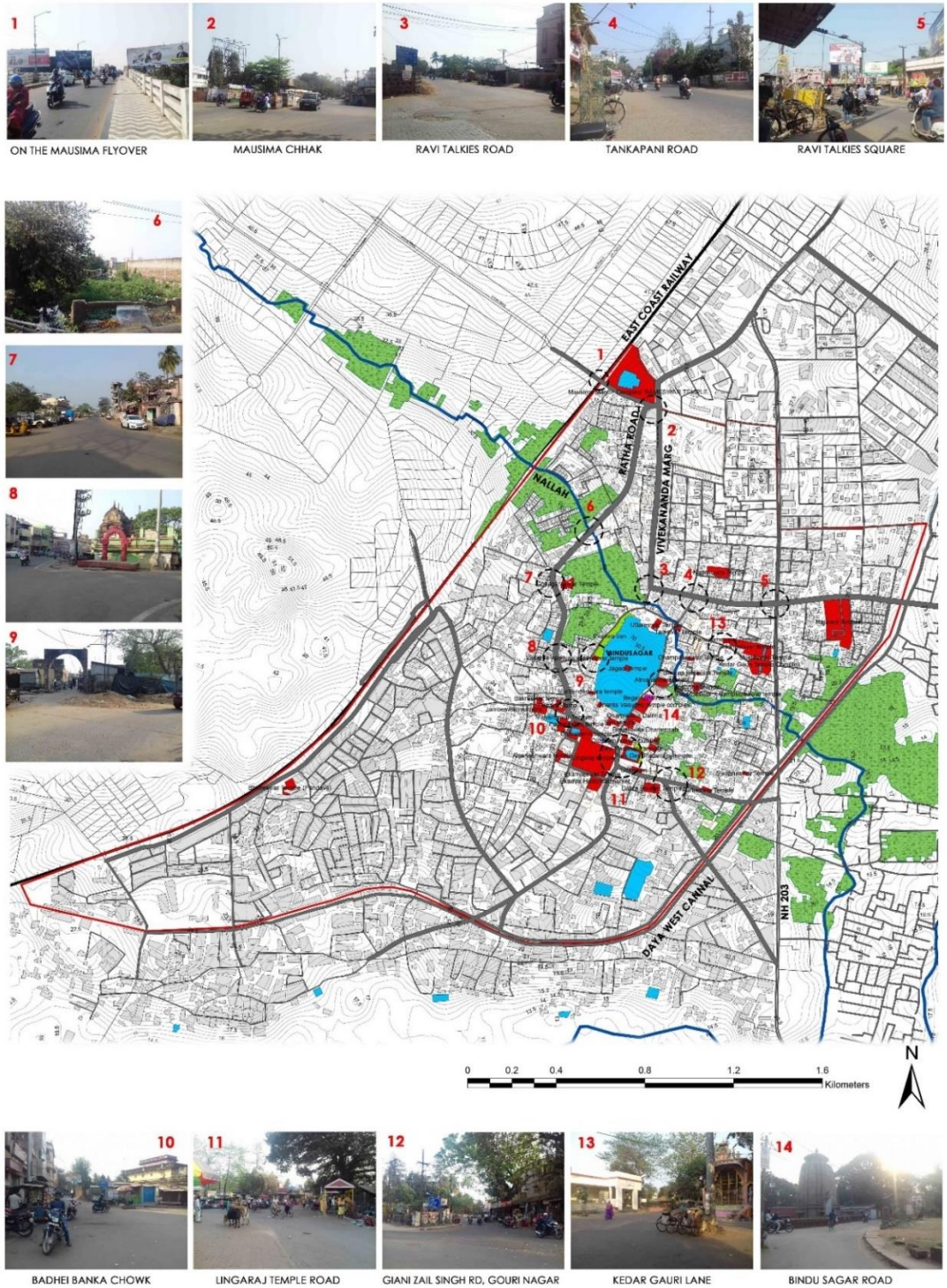
7.4 Seasonal variation of Vegetation

PARAMETER	TREE SPECIES	COMMON NAME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HIGH CARBON STORING CAPACITY	<i>Lagerstroemia speciosa</i>	Pride of India				PINK								
	<i>Mimusops elengi</i>	Bakul					WHITE							
	<i>Cassia fistula</i>	Amaltas				YELLOW								
	<i>Simarouba glauca</i>	Paradise tree						YELLOW						
	<i>Peltophorum pterocarpum</i>	Radhachura												
	<i>Azadirachta indica</i>	Neem					WHITE							
	<i>Delonix regia</i>	Gulmohar					ORANGE							
	<i>Albizia saman</i>	Rain tree					WHITE							
	<i>Albizia lebbek</i>	Shirish					WHITISH YELLOW							
	<i>Alstonia scholaris</i>	Chatim												WHITE
NECTAR YIELDING FOR BEE POPULATION	<i>Bauhinia purpurea</i>	Kanchana /Bauhinia	PURPLE,WHITE, PINK											
	<i>Syzygium cumini</i>	Jamun					WHITE							
	<i>Dalbergia sissoo</i>	Shisham												
	<i>Crataeva nurvala</i>	Baruna												
	<i>Magnifera indica</i>	mango, aam		YELLOW										
BIRD FEEDING	<i>Ficus benghalensis</i>	Bata												
	<i>Ficus religiosa</i>	Aswastha												
FRUIT BEARING	<i>Diospyros melanoxylon</i>	Kendu, tendu						YELLOW						
	<i>Tamarindus indica</i>	tamarind						YELLOW						
AVENUE TREES FOR ROADS	<i>Bombax ceiba</i>	Simal		RED										
	<i>Saraca asoca</i>	Ashok		RED										
	<i>Polyalthia longifolia</i>	Ashoka				GREENISH WHITE								
	<i>Kigelia africana</i>	Kigella							RED					
	<i>Butea monosperma</i>	Palash			ORANGE									
	<i>Jacaranda mimosifolia</i>	Jacaranda					VIOLET							
	<i>Couropita guianensis</i>	Nagamalli												
WORSHIPED IN OUR CULTURE	<i>Aegle marmelos</i>	Bel							GREEN					
	<i>Phyllanthus emblica</i>	Amla				RED								
	<i>Terminalia chebula</i>	Harida												
	<i>Terminalia bellirica</i>	Baheda					GREENISH YELLOW							
	<i>Crataeva nurvala</i>	Baruna						YELLOWISH WHITE						
FLOWERING TREES FOR NATURE WALK	<i>Polyalthia longifolia</i>	Ashoka				GREENISH WHITE								
	<i>Bombax ceiba</i>	Red silk cotton		RED										
	<i>Jacaranda mimosifolia</i>	Jacaranda					VIOLET							
	<i>Syzygium cumini</i>	Java Plum												
	<i>Plumeria rubra</i>	Temple tree							YELLOW / PINK					
	<i>Bauhinia variegata</i>	Mountain Ebony				CRIMSON								
	<i>Erithrina variegata</i>	Coral tree				RED								
	<i>Lagerstroemia speciosa</i>	Pride of India							PINK					
	<i>Cassia javanica</i>	Pink cassia												
	<i>Albizia saman</i>	Rain tree					PINK+WHITE							
	<i>Cassia fistula</i>	Amaltas					YELLOW							
	<i>Magnolia grandiflora</i>	Golden champak							YELLOW					
	<i>Madhuca longifolia</i>	Mohwa							CREAMY WHITE					
	RELIGIOUS ASSOCIATION	<i>Calotropis procera</i>	Akonda							WHITE WITH BLUE OR PURPLE				
<i>Aegle marmelos</i>		Bael							PALE GREEN OR YELLOW					
<i>Zizyphus mauritiana</i>		Ber					WHITE TO YELLOWISH GREEN							
<i>Santalum album</i>		Chandan				RED								
<i>Datura stramonium</i>		Datura								YELLOW,PINK,PURPLE				
<i>Thevetia peruviana</i>		Peeli kaner											YELLOW	
<i>Elaeocarpus ganitrus</i>		Rudraksha						WHITE						

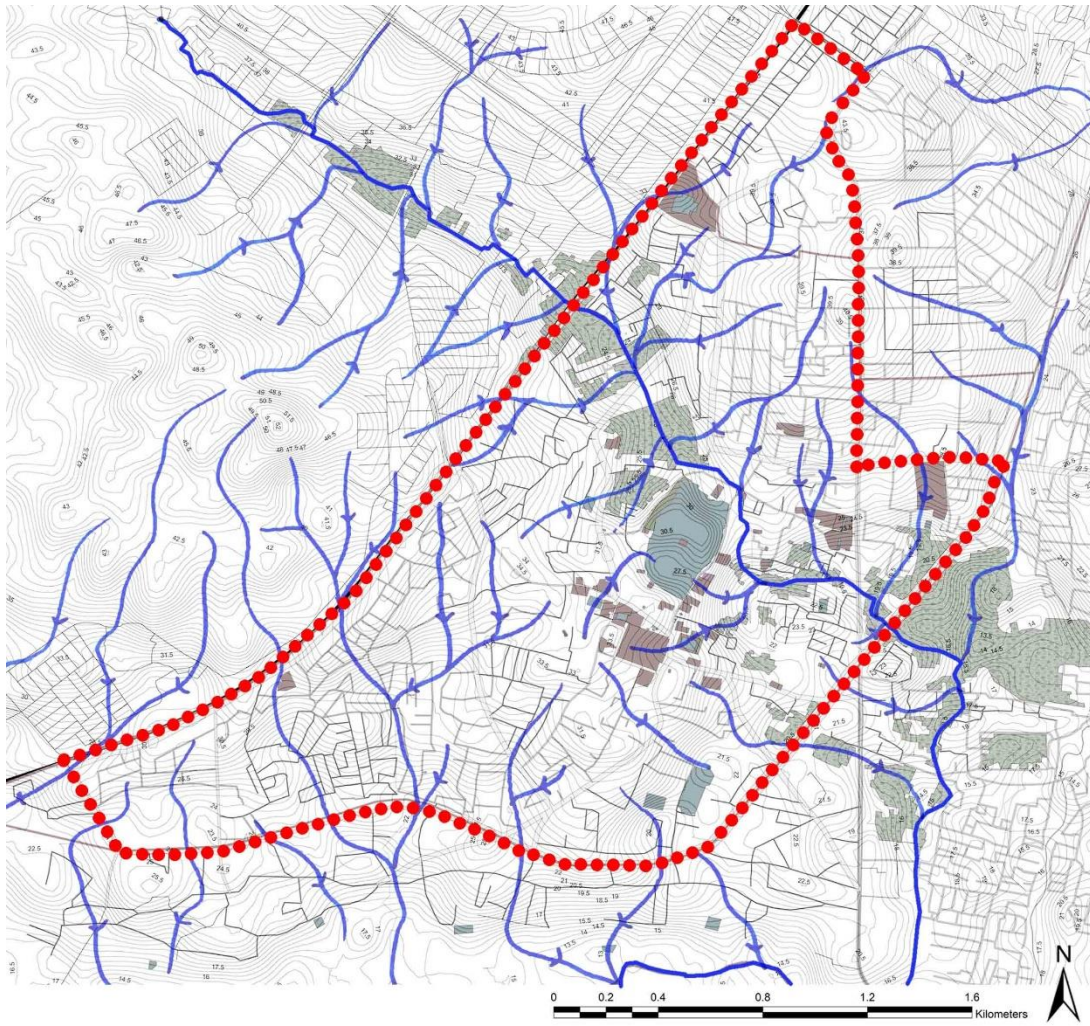
CHAPTER 8: ANALYSIS AND OBSERVATIONS

8.1 Elements of Study area

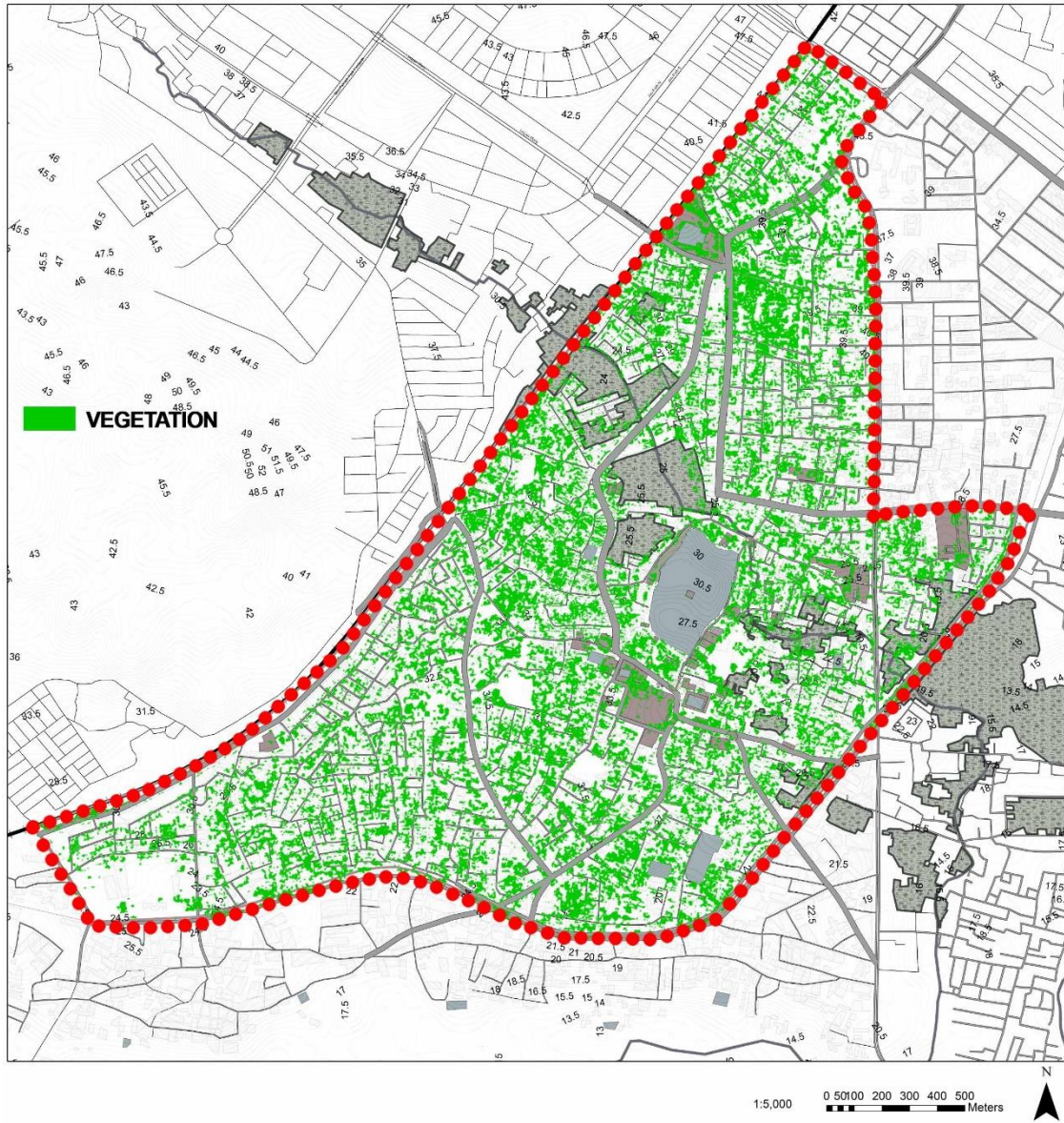
8.1.1 Existing Scenario



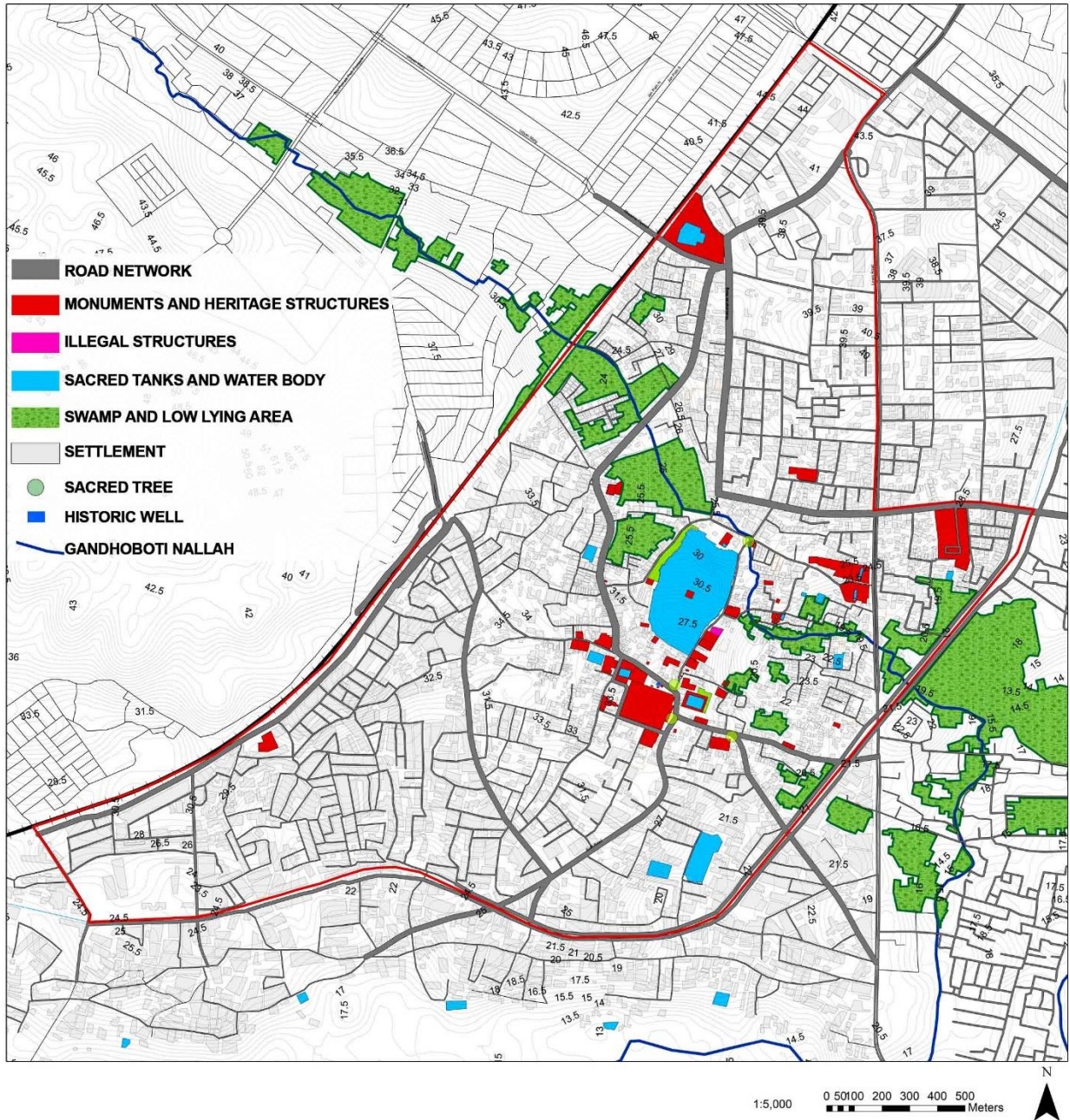
8.2.2 Hydrology



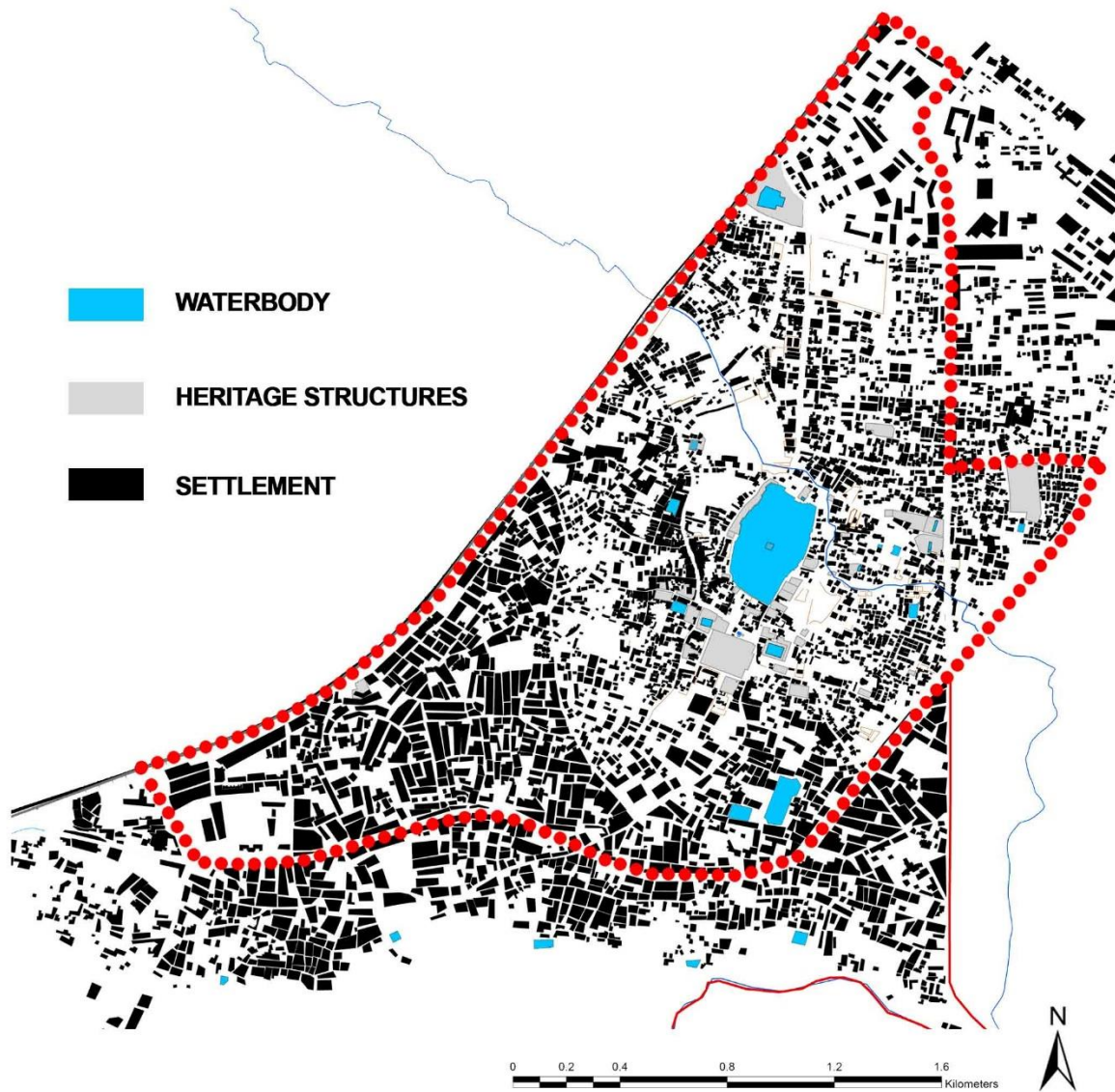
8.2.3 Vegetation



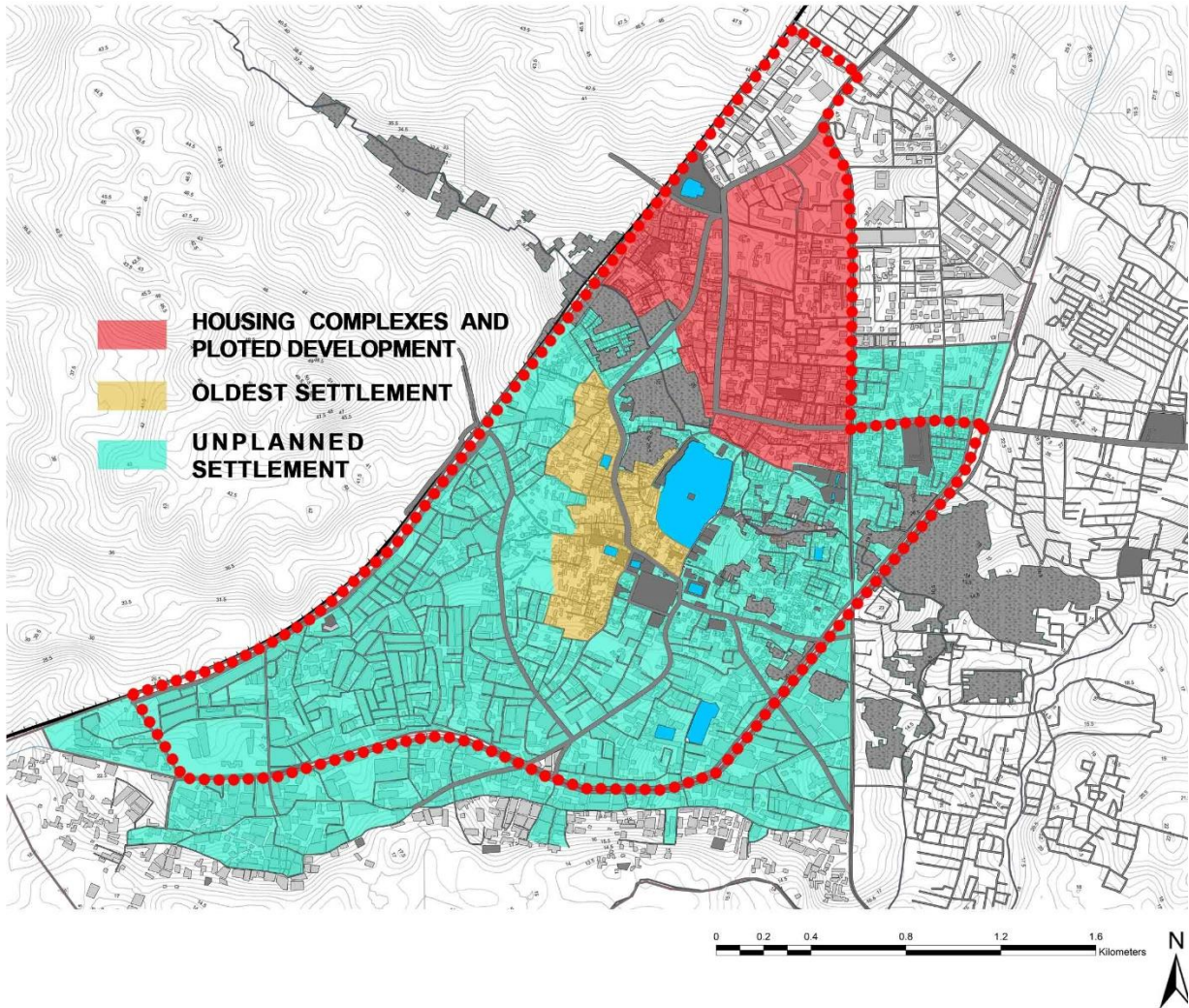
8.2.4 Structural Construct



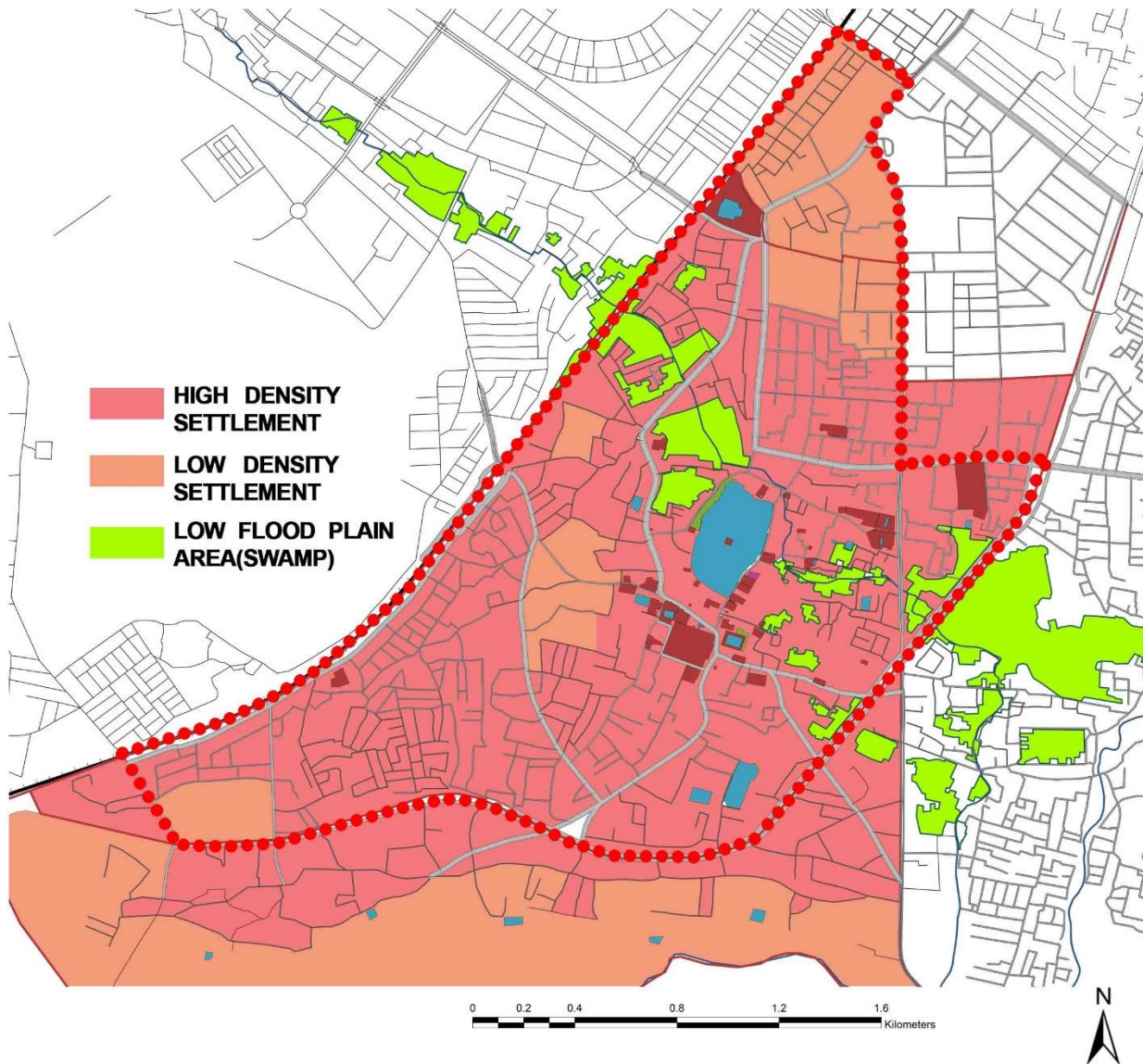
8.2.5 Figure Ground Map 2018



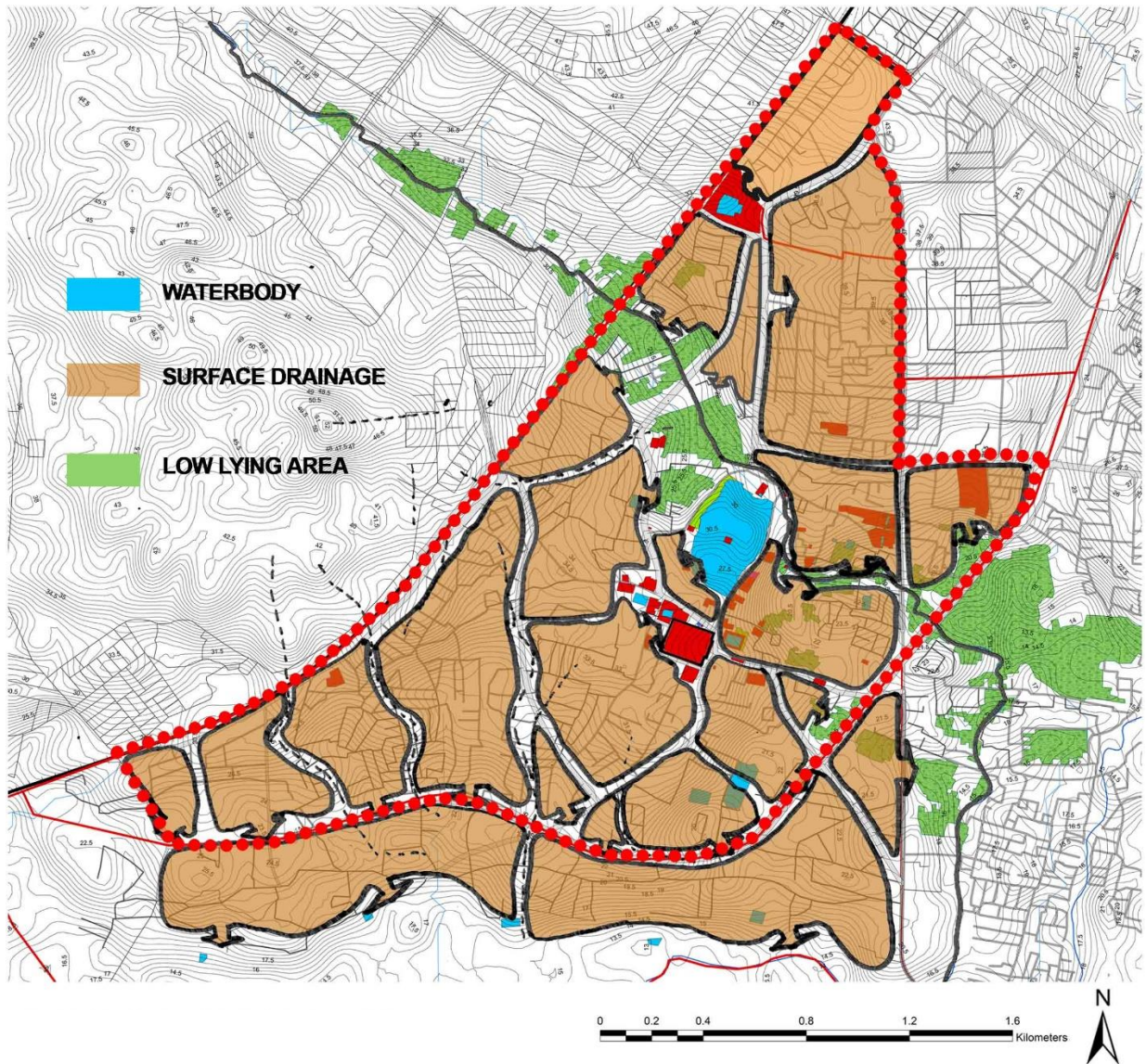
8.2.4 Settlement Typology



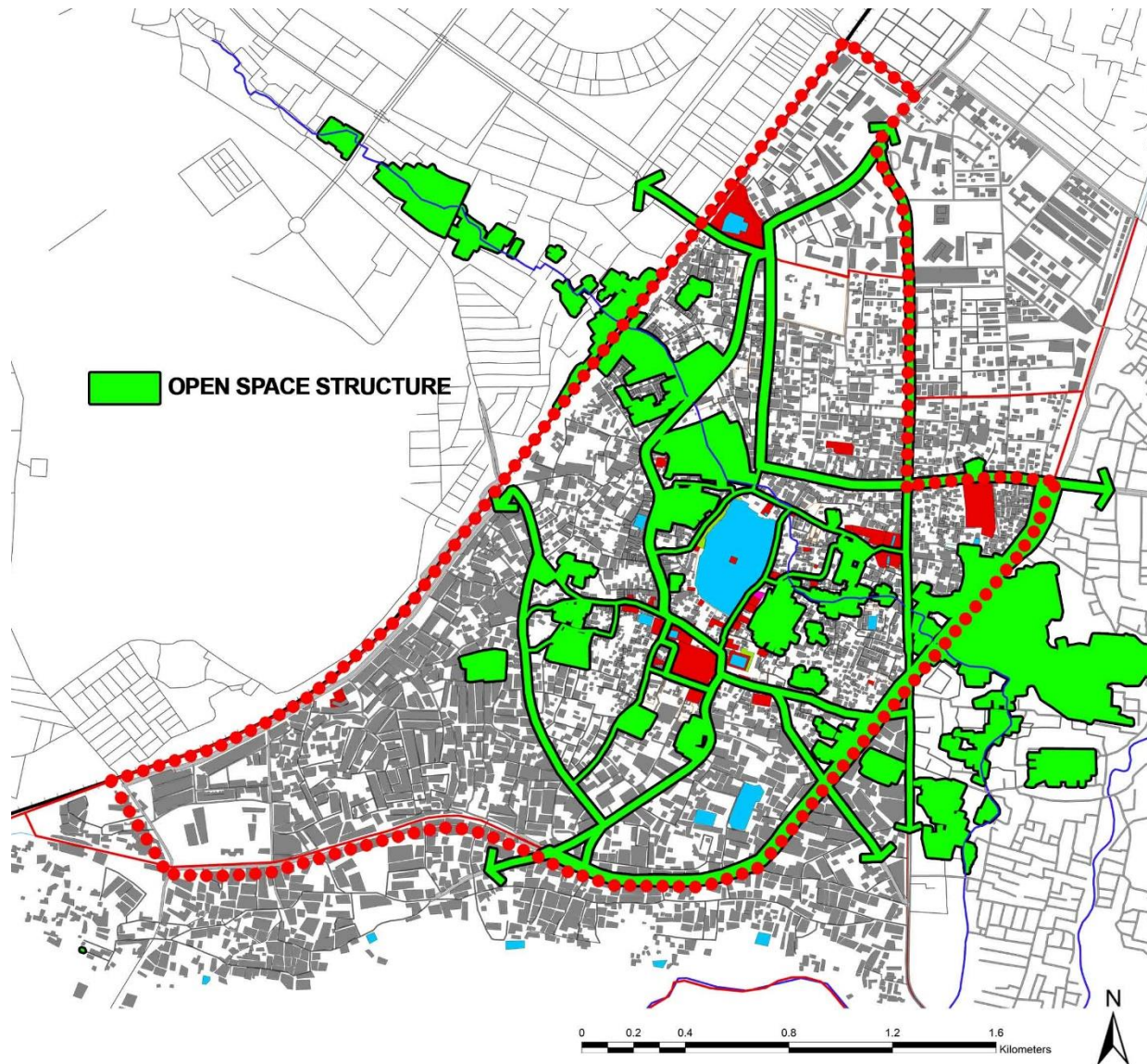
8.2.5 Settlement Density 2018



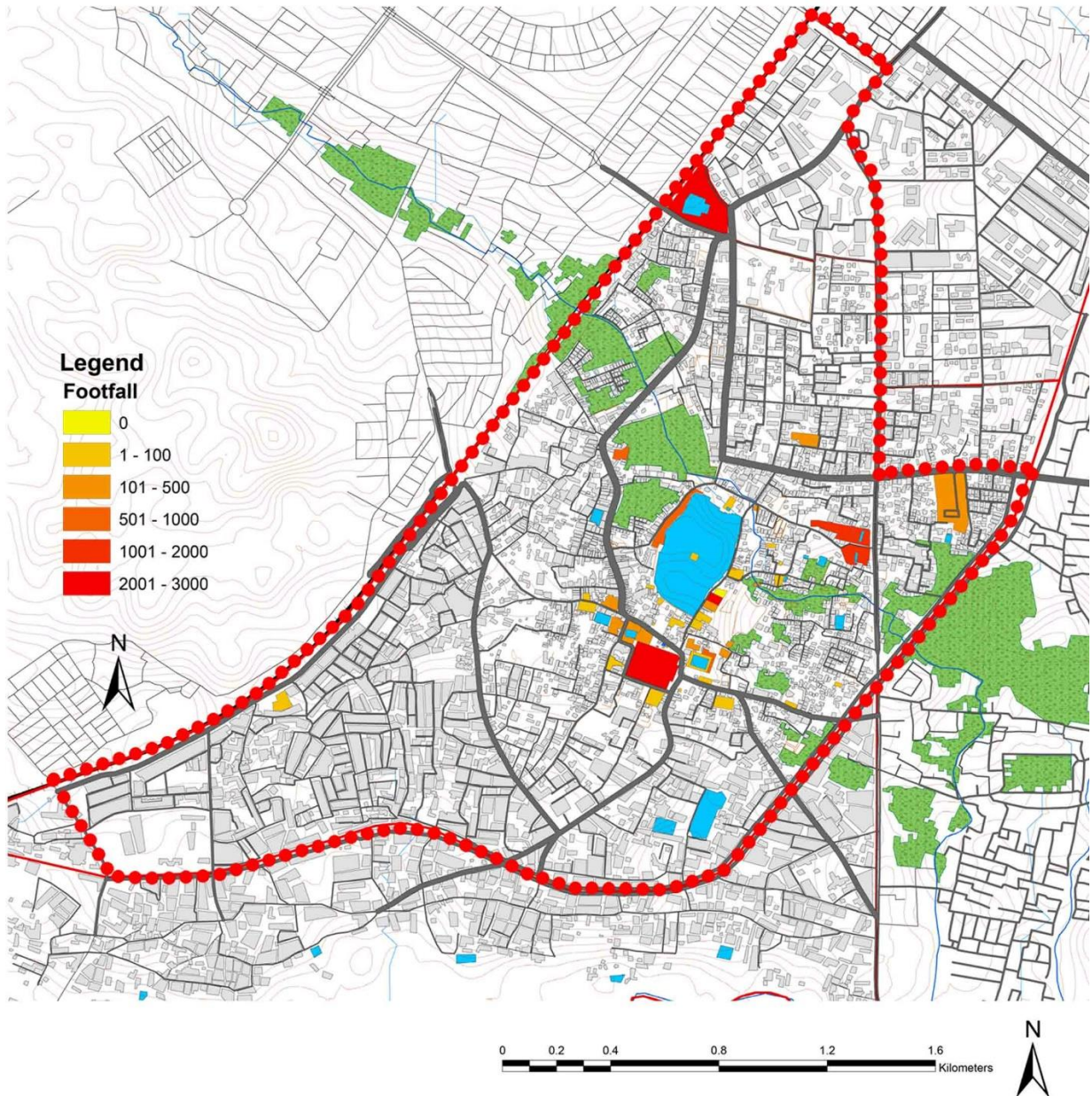
8.2.6 Surface Drainage 2018



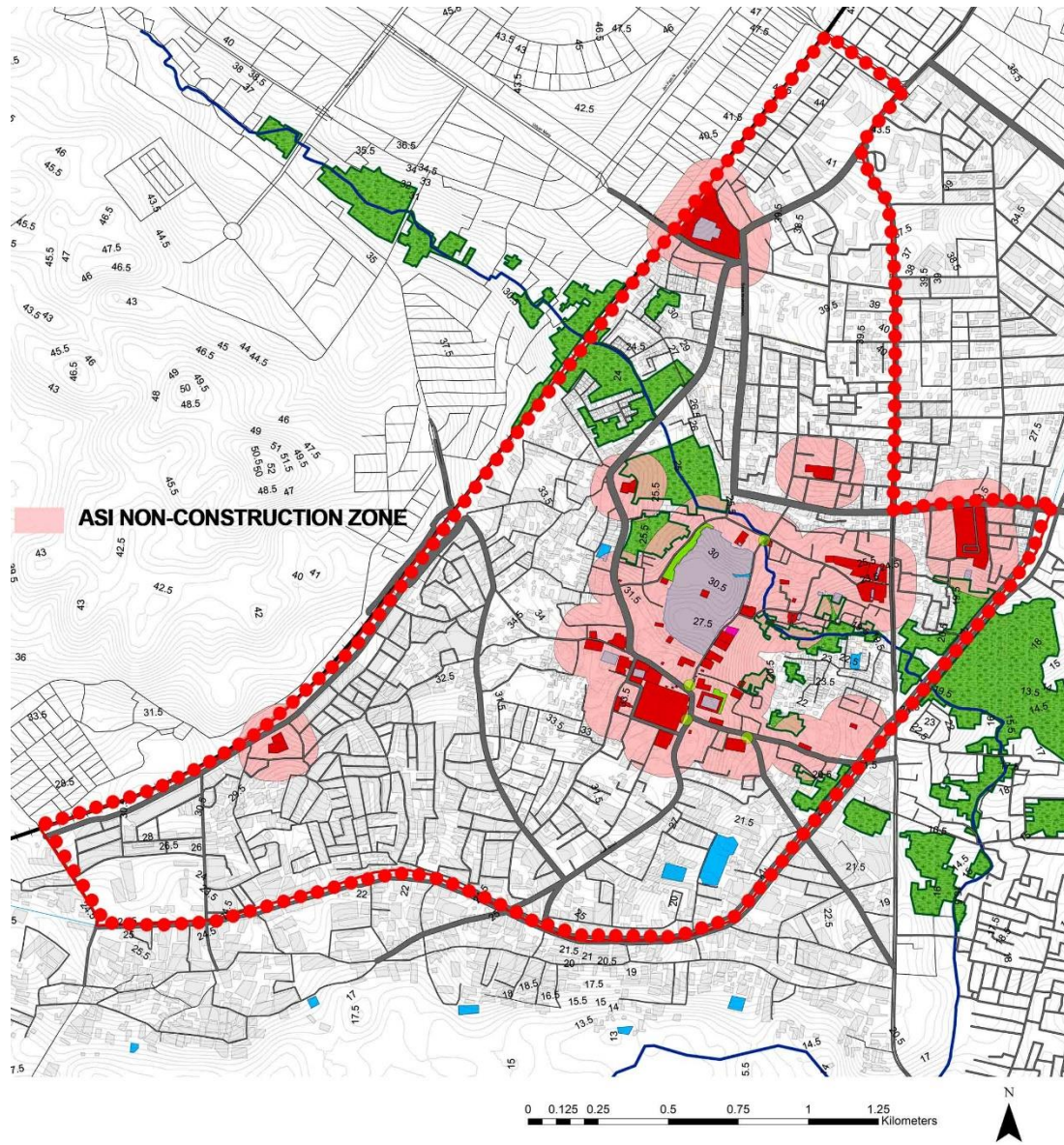
8.2.7 Open Space Structure 2018



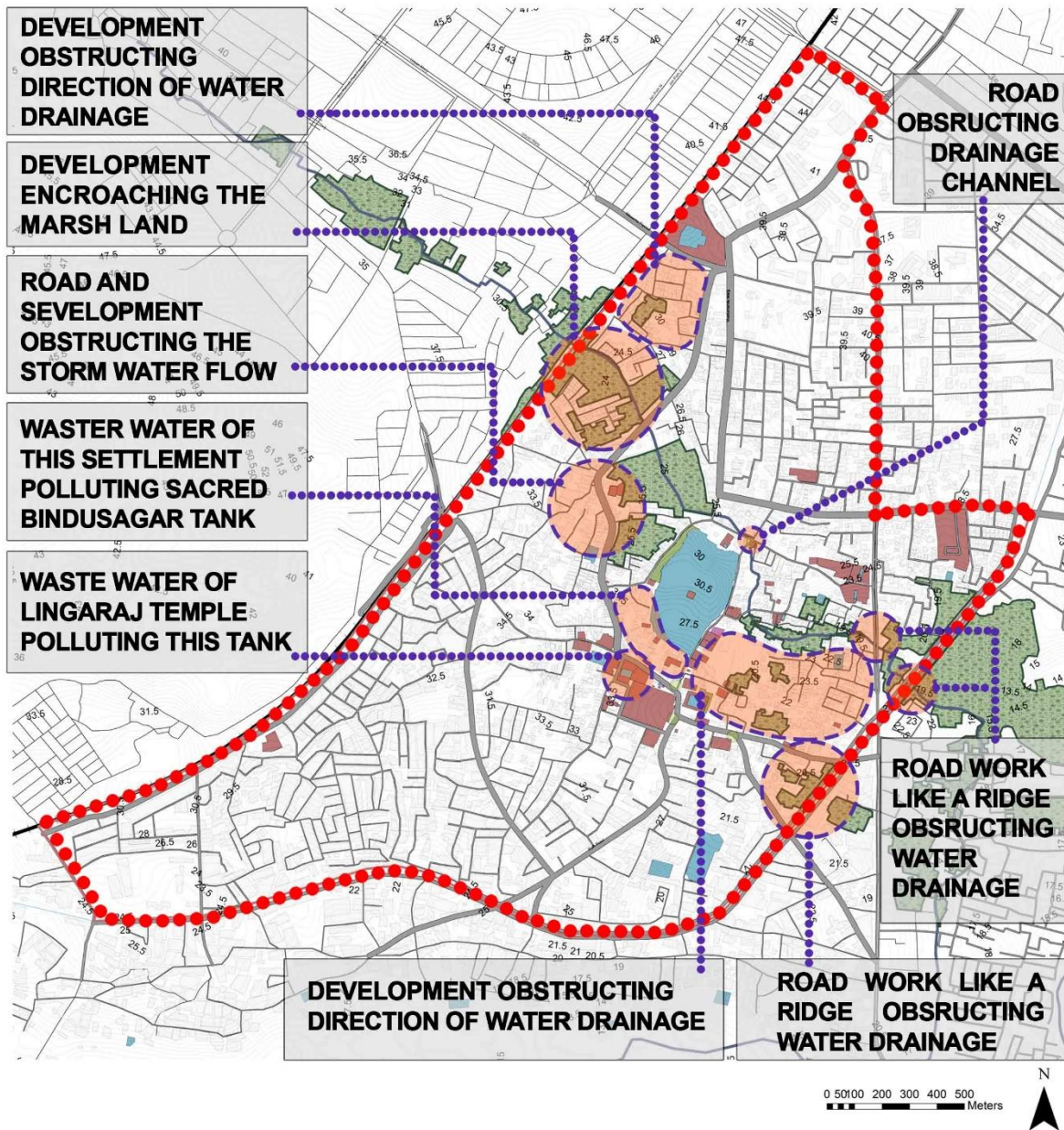
8.2.8 Footfall Analysis 2018



8.2.9 ASI Regulated zone

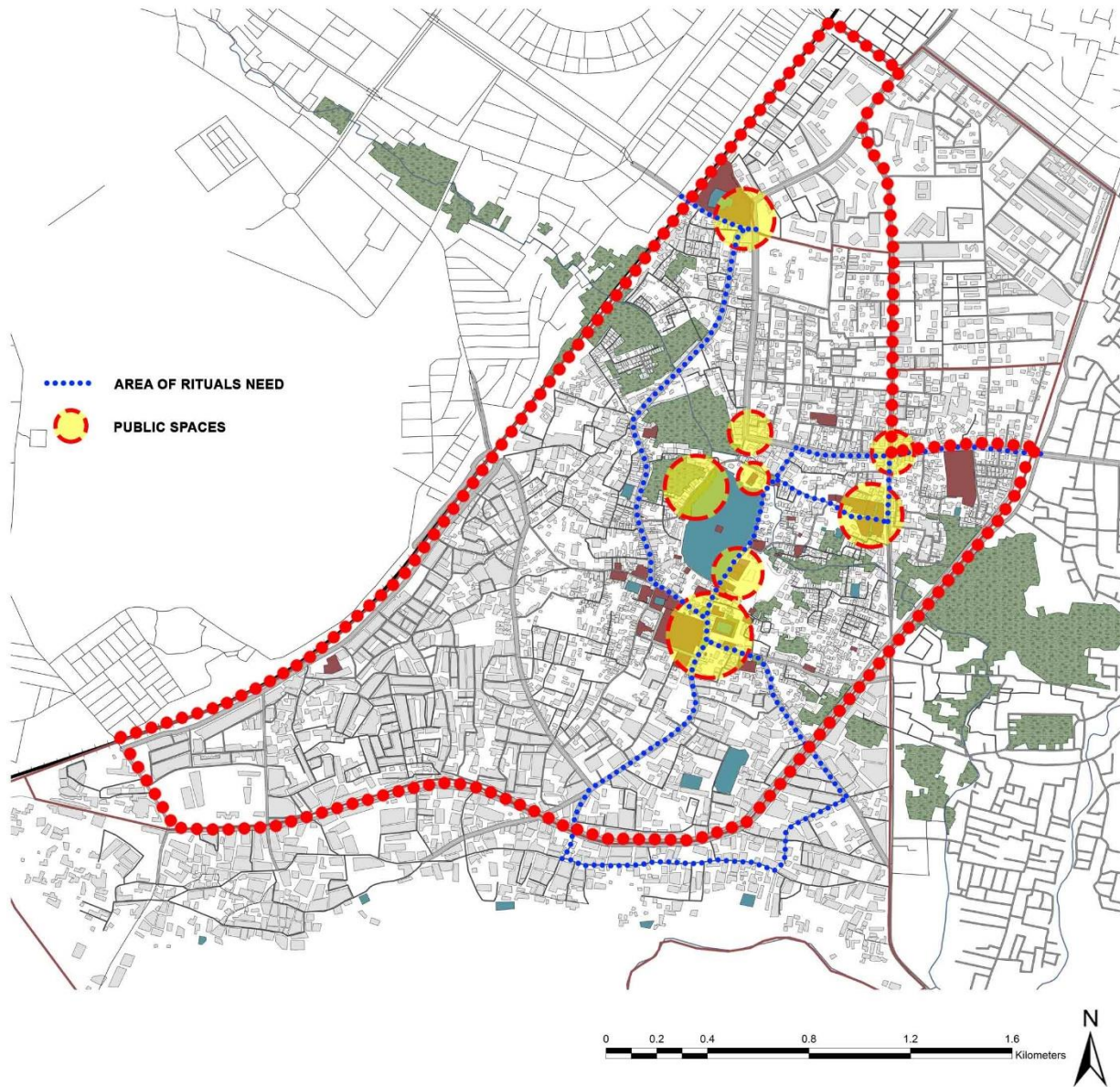


8.2.10 Issues Observed around the Precinct

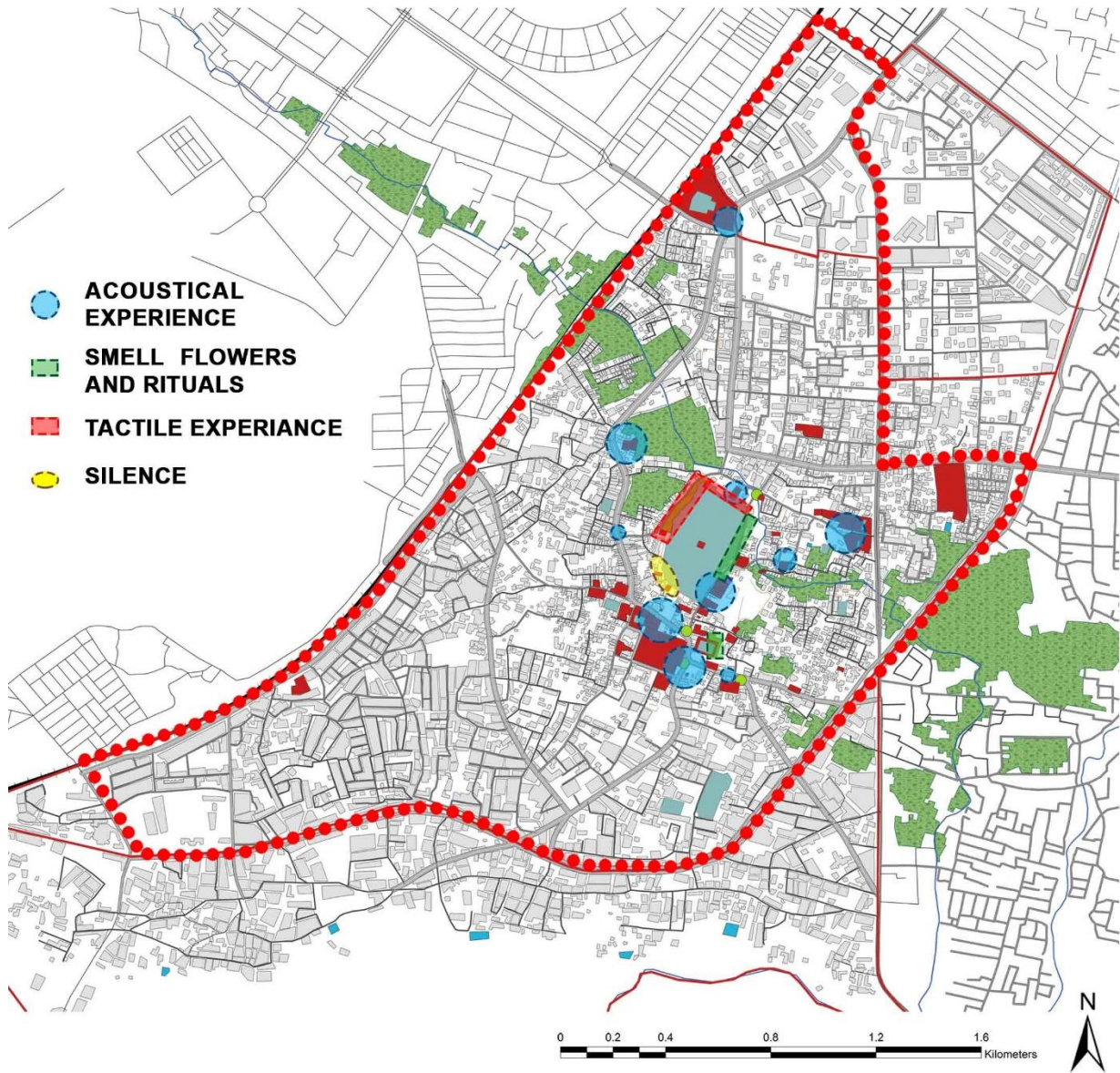


8.3 Landscape Association and Significance in Present days

8.3.1 Religious Need and Public Spaces



8.3.2 Sensory Experience

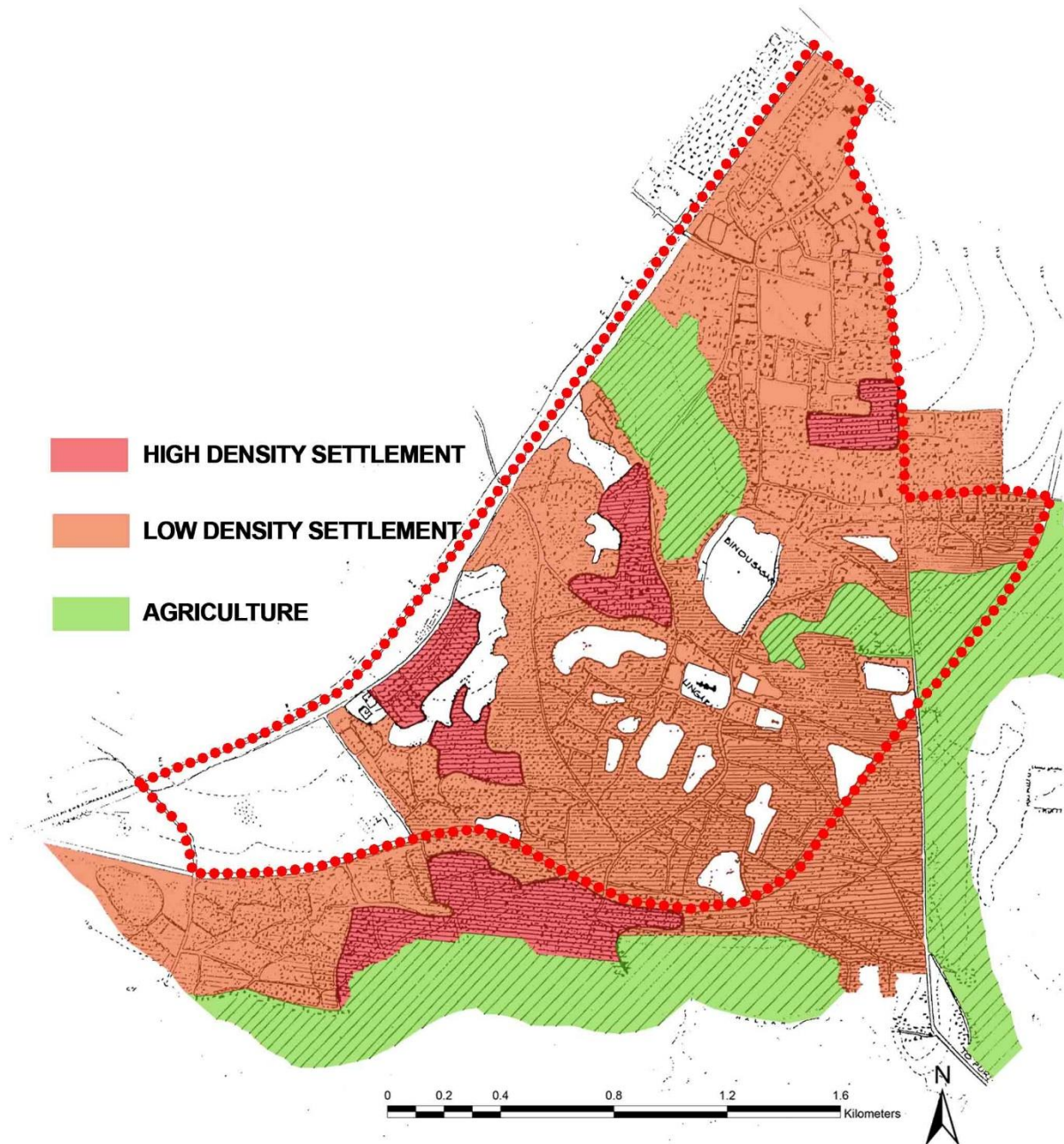


8.3.3 Visual Connectivity

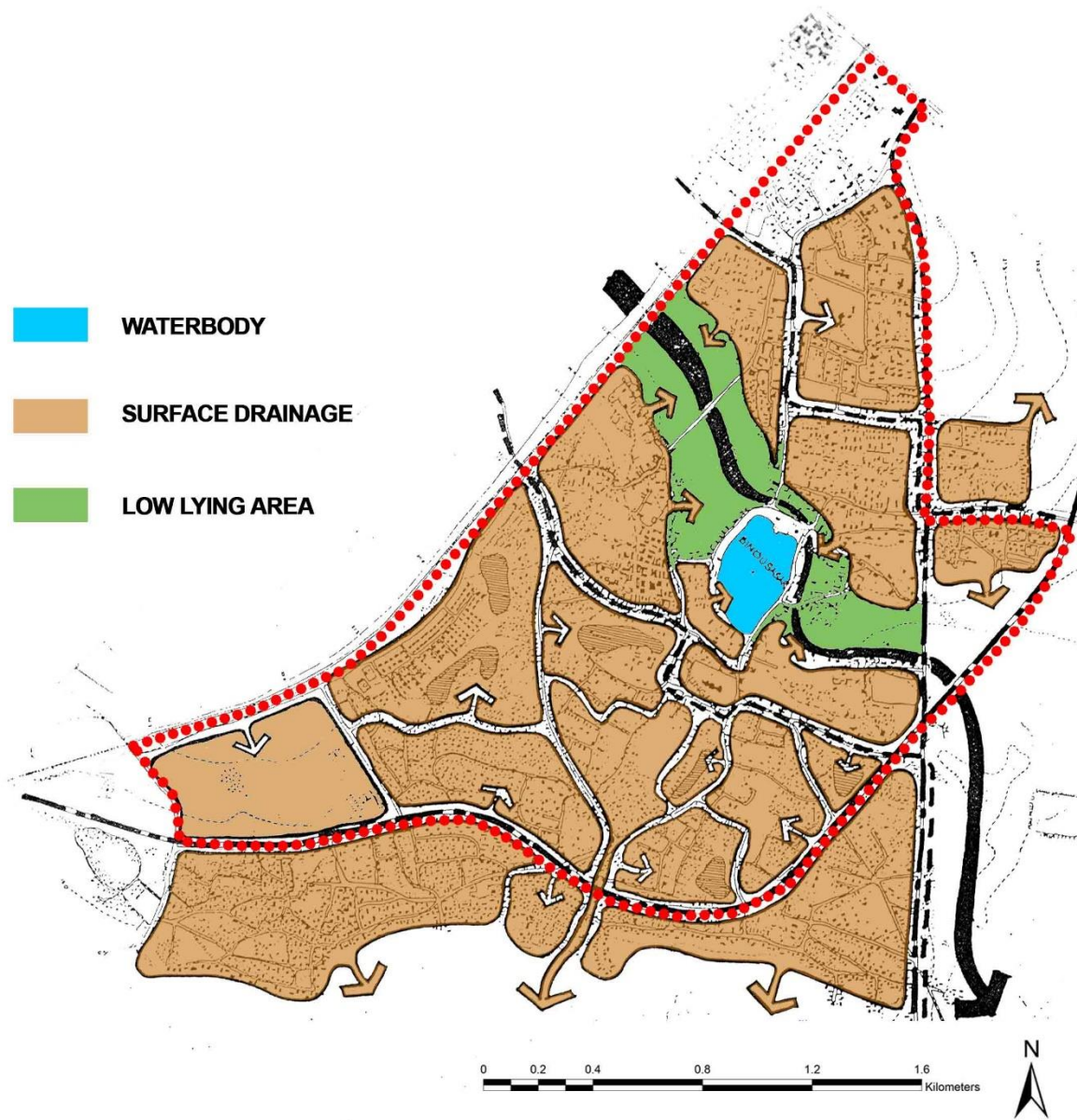


8.4 Scenario in 1989

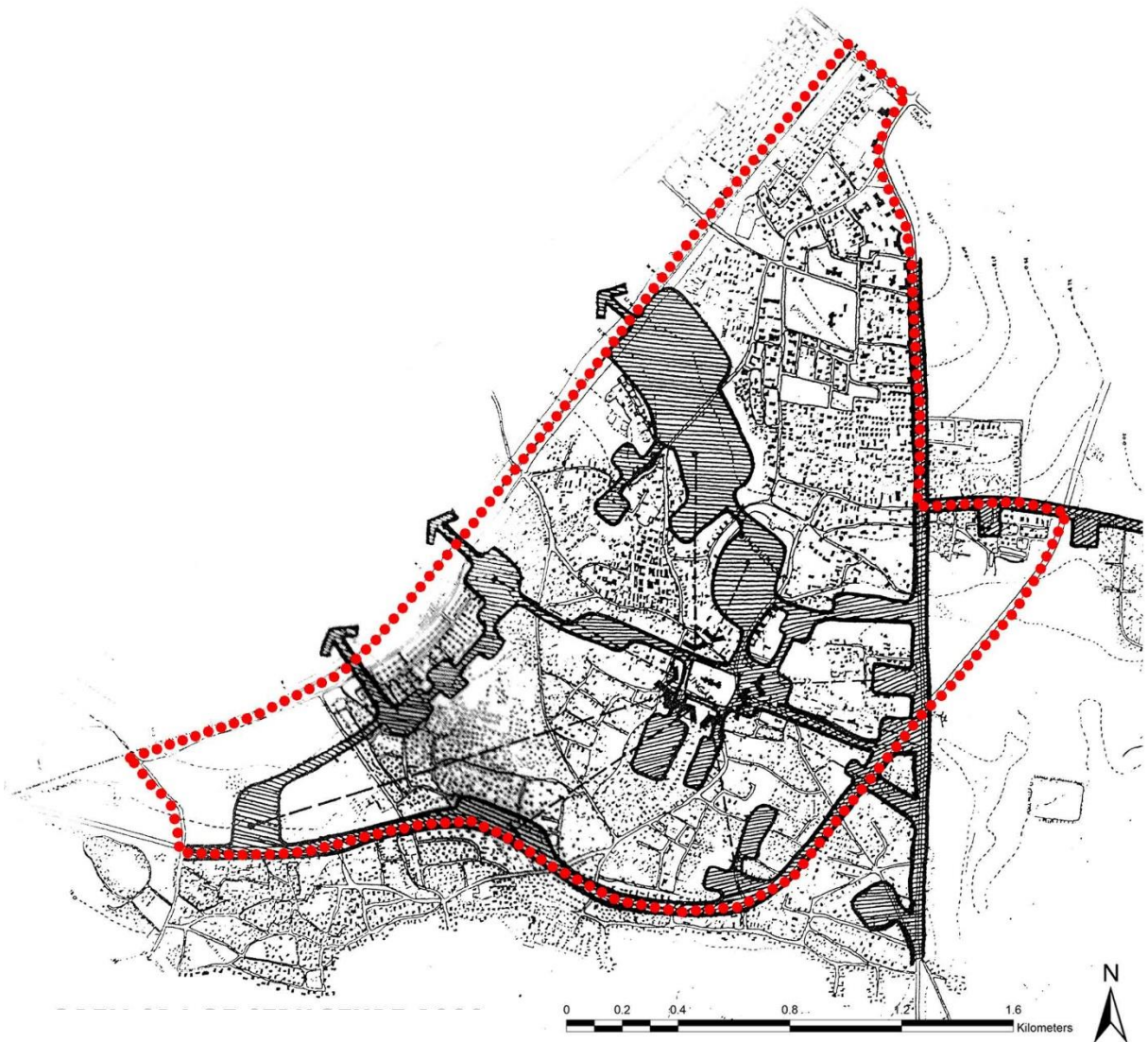
8.4.1 Settlement Density 1989



8.4.2 Surface Drainage 1989



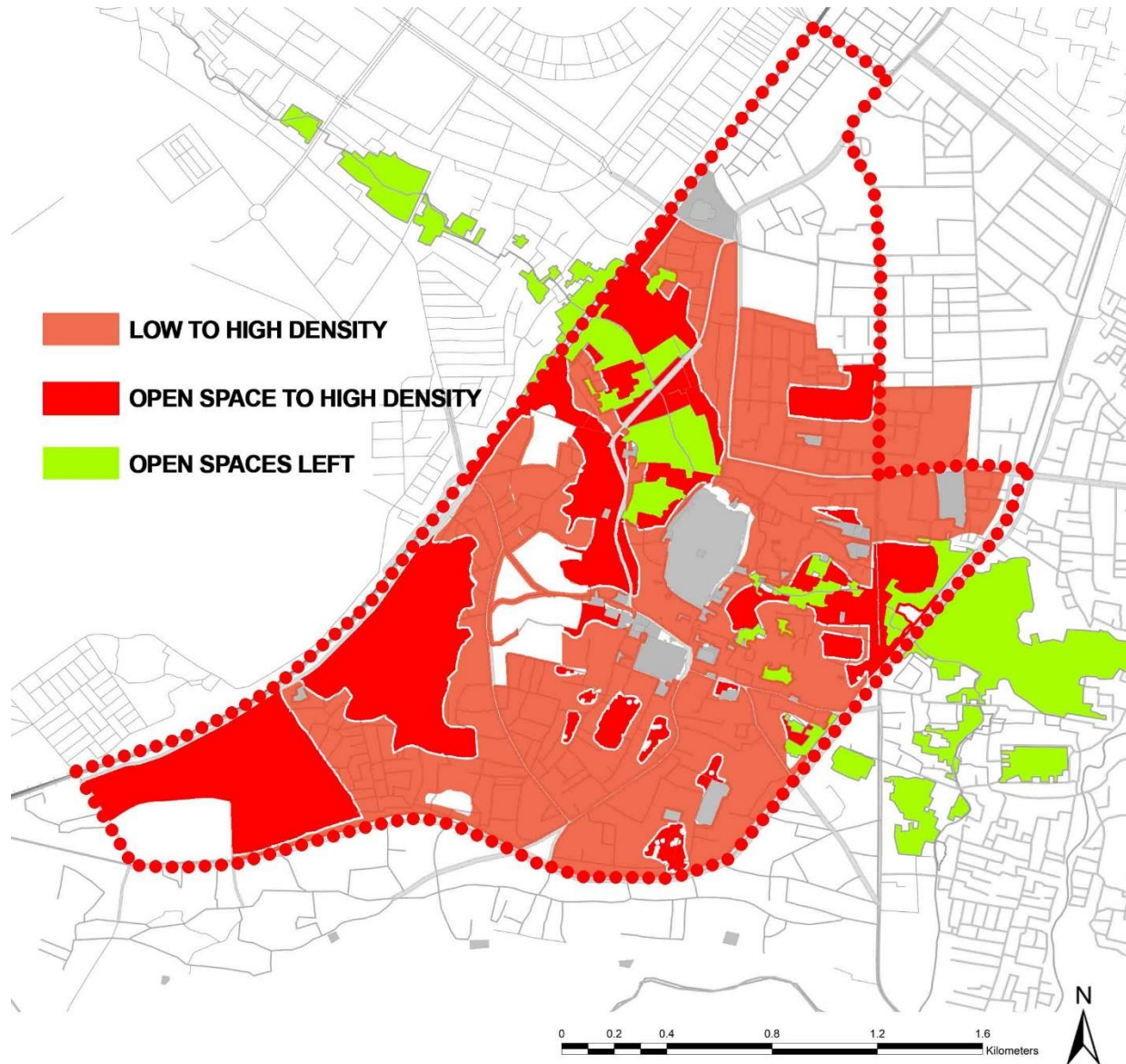
8.4.3 Open space structure 1989



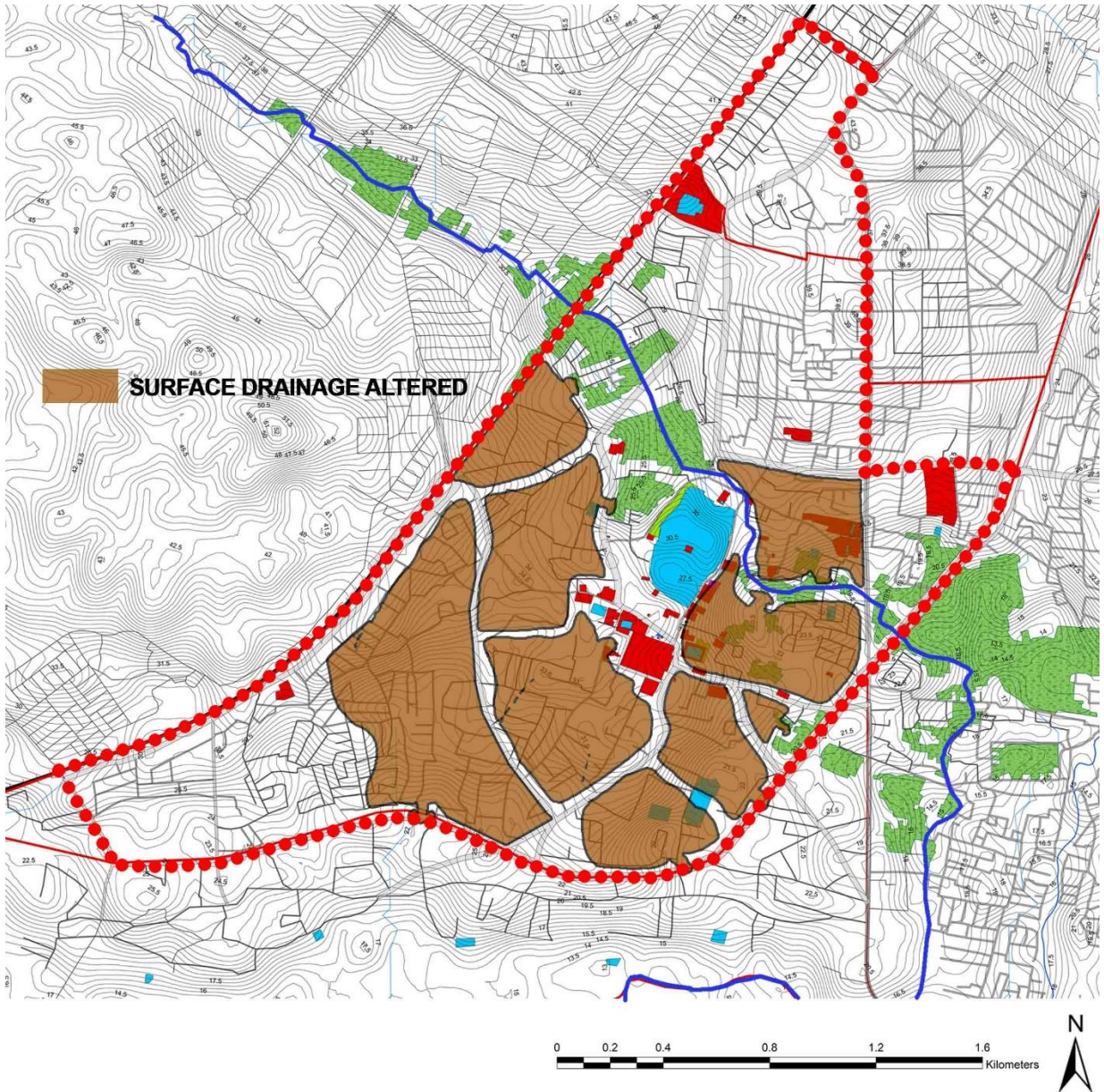
8.5 Threat and Issues Identification

8.5.1 Landscape Trend Analysis

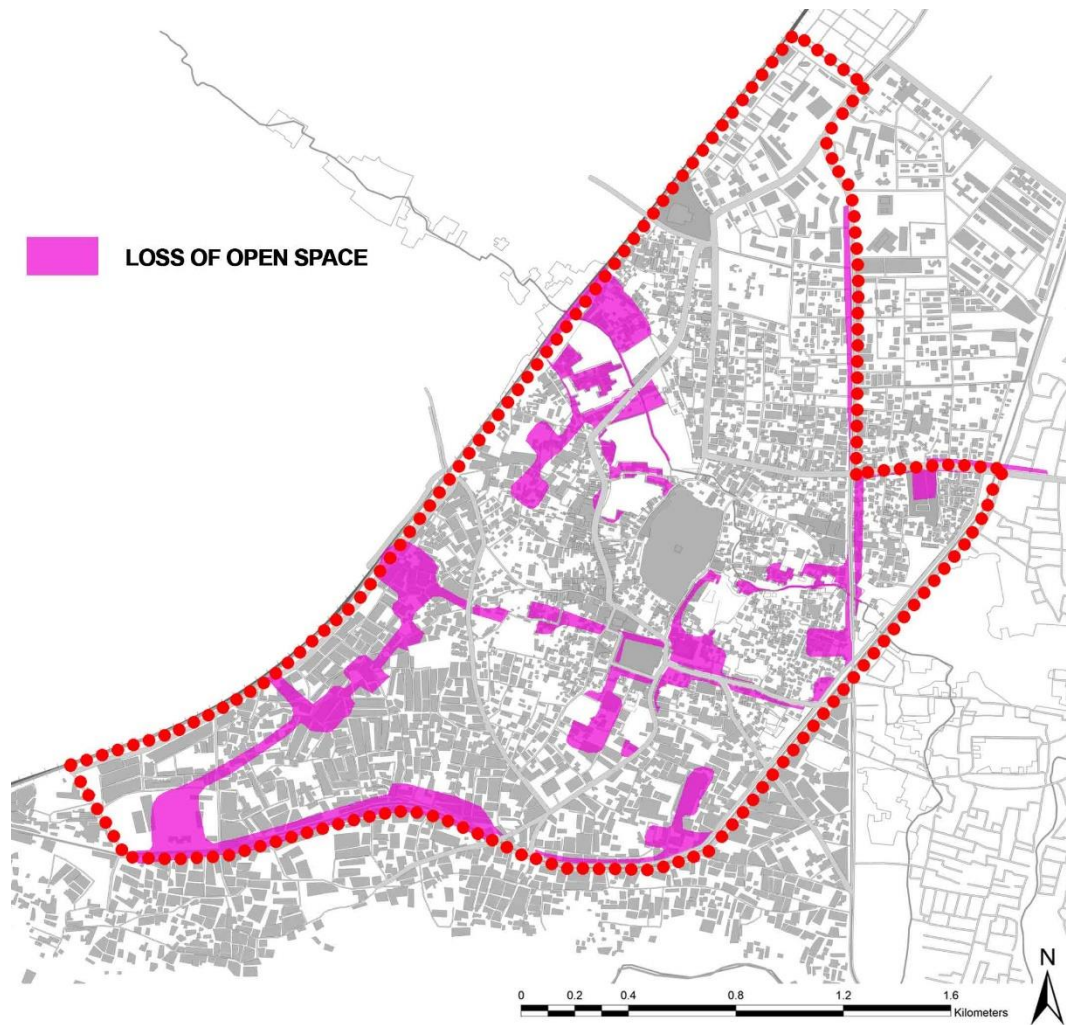
- *Settlement density changes in last 29 years*



- **Surface Drainage changes in last 29 years**



- *Open Space Structure changes in last 29 years*



CHAPTER 9: INFERENCES AND PROPOSALS

9.1 Inferences from Analysis

ANALYSIS	INFERENCES
CLIMATE	Rise of humidity and temperature in region are very high. So, there is a need of shaded area for walkable zone, recreation zone, pause pointsetc.
	Rainfall is very high in this region. So, there is a need to manage storm water efficiently.
	Humidity is very in summer season. So, there is a need to reduce humidity in public area using humidity absorbing plants and trees
GEOLOGY	This area has a moderate to good potential to provide stable foundations, good natural drainage and similarly good scope for harvesting ground water for drinking and domestic use.
HYDROLOGY	The undulating plain is sloped towards south-east towards Daya river. Mainly half of the area of this area drainage through Gandhabati nallah.
VEGETATION	There are minimum two to three tree along with coconut trees inbetween every cluster of 4 to 5 buildings inside this kind of high density settlement. This is the another phenomenon of this area. So, vegetation cover reflects the soil suitability of this area and association between trees and people of this region.
ASTA-AYATANA	These eight centers are actually clusters of sacred ponds and shrinethe number of monuments include in the Asta-ayatana are fifty four. So, Delineation must be based on the basic principal to revive the astha-ayatana concept.
FESTIVALS	From the calander of festivals of this area I found out the duration time of those festivals and use this information in my design strategy as planting scheme, movement scheme, amenity scheme etc.
SEASONAL VARIATION OF VEGETATION	Planting scheme of this are should be based on the basis of sesonal variation of vegetation like flowering season, leaves falling season etc...
ELEMENT OF STUDY AREA	Understanding the structural layers of this precict and idetified some issues behind the degradation of this precinct. Landscape Master plan is designed to resolve these problems.
LANDSCAPE ASSOCIATION	Understanding the association between precinct and people which help me to identify expencial quality of different spaces. These kind of space should be also emphasize in design as public space.
SETTLEMENT DENSITY CHANGES IN 30 YEARS	Identify the growth pattern of changing the density of settlement.
SURFACE DRAINAGE CHANGES IN 30 YEARS	Identification of changes in serface drainage because of alteration of slope and filling of low lying area for development.
LOSS OF OPEN SPACES IN 30 YEARS	Understand the trend of degration of open space to justify my proposal
OPEN SPACE HIERARCHY AND THEIR POTENTIALS	Understand the qualitative and potentiality of eaach indeividual site.

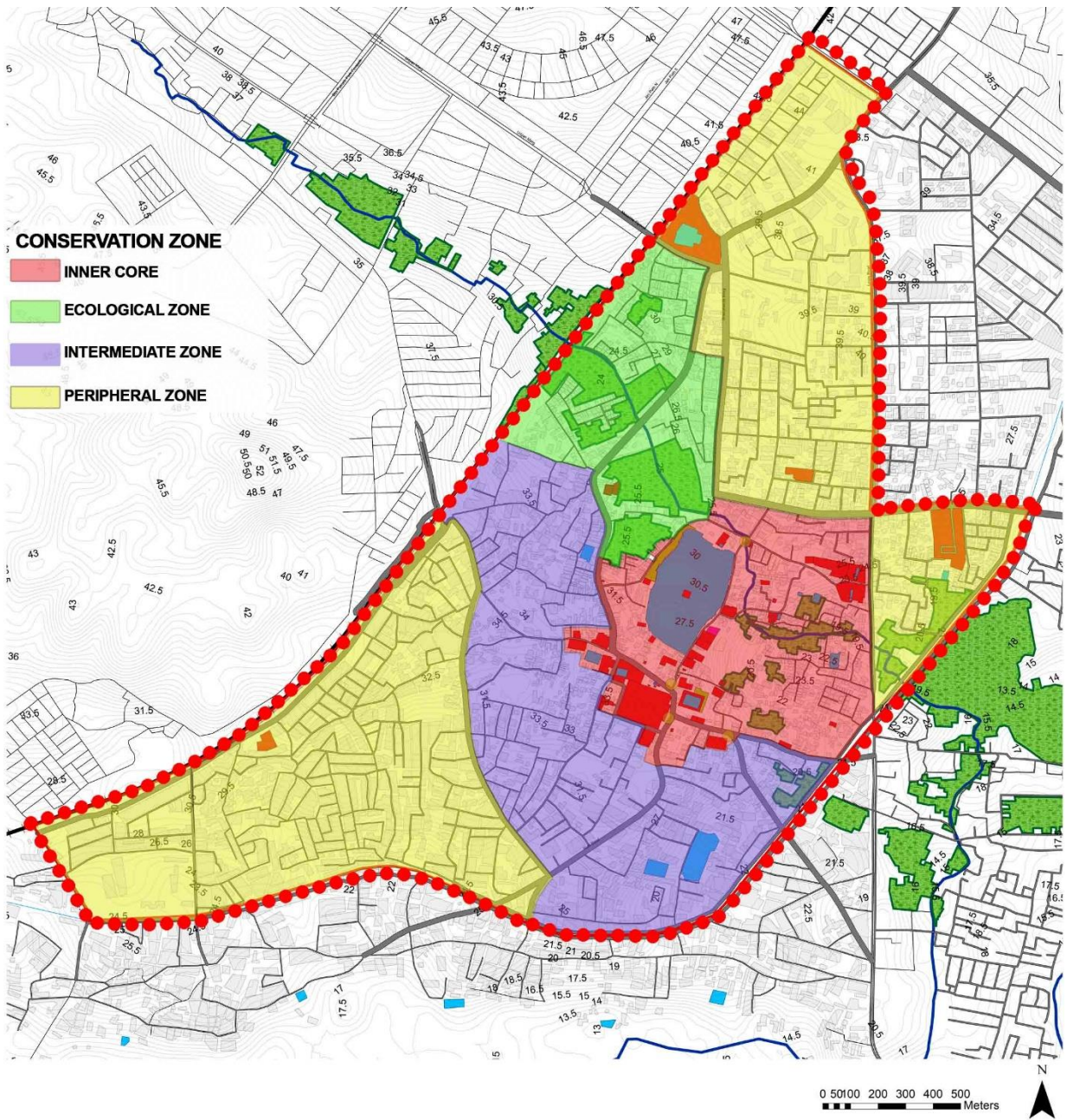
9.2 Guidelines

9.3.1 Development Guideline

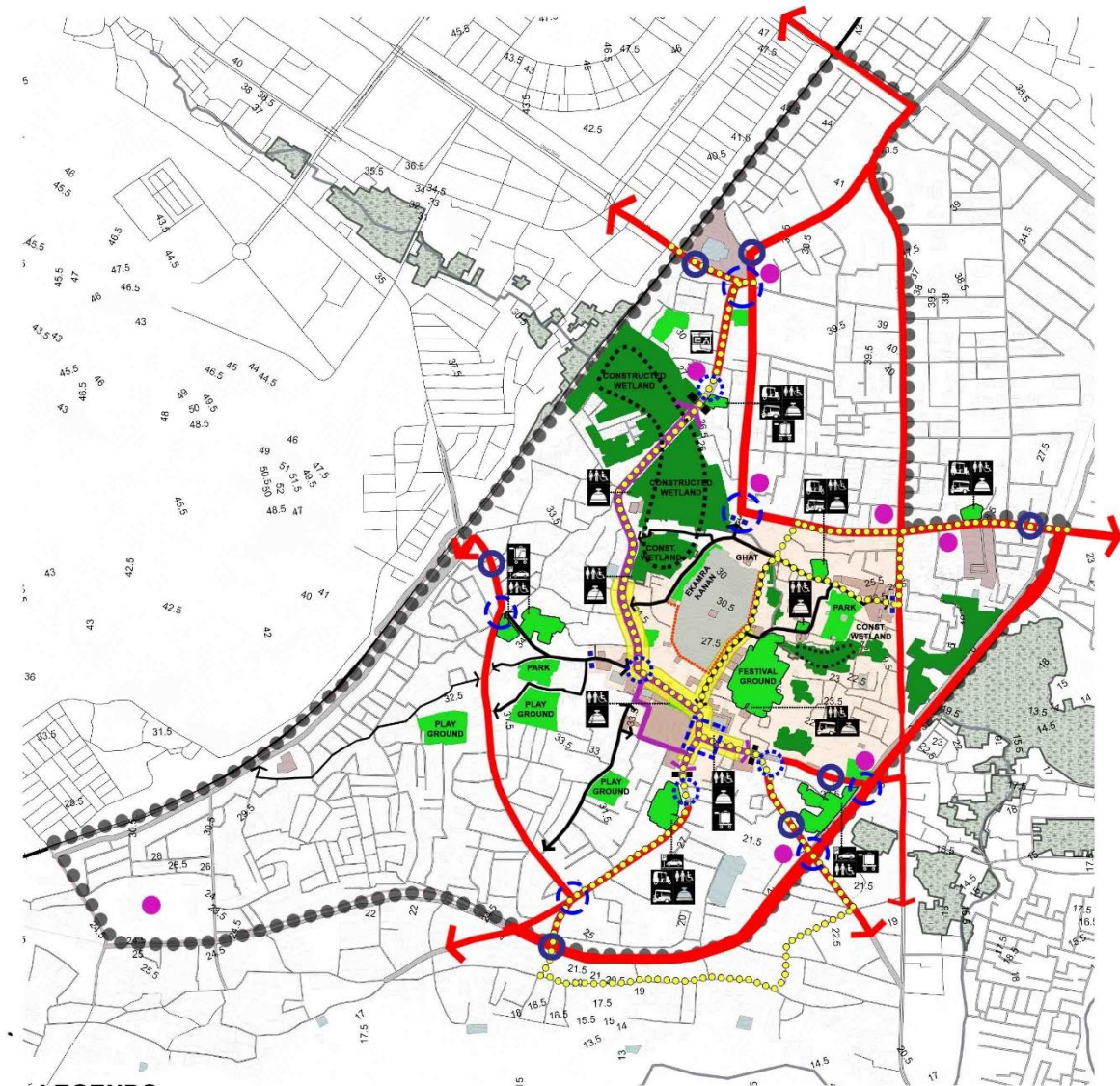
ZONES	LANDSCAPE FEATURE	DESCRIPTION	ISSUES	PROPOSALS	
				GUIDELINE	DESIGN INTERVENTIONS
INNER CORE	MONUMENT	37	Encroachment around the edge of those monuments, signages around monuments, Solidwaste from temples. Sewrage water from temples	Any temporary or permanent construction not allowed around the monument edge, Buffer space should be provide along the monument boundary walls on the road side and residential edges, Proper signages should be provided along streets, Street junctions, in front of monument. STP should be proposed for all temple complex	Design of streetscape, Heriatge precinsts, instaltlation of site furniture scuh as signages etc.
	SACRED TANK AND WELL	6	eutrofication, garbage dumping, surroung surface water fall in these tanks, some tanks are not been used,	Waste management to be proposed, Sewrage channels should be intercepted for treatments by techniques such as stps, phyto remediation techniques etc. Draiang water management system should be ehanced to protect sacred tanks from eutrifications, Buffer zones of tanks to be planted. Areas around buffer zones should be revitalised as a public space to promote awareness about heritage.	tank edge, suface drainage management, some tanks can reuse as public pause point for rest.
	SACRED Heritage TREE	3	tree courts are encrouched by vendors, no proper tree edging	Any road edge should be constructed atleast 3m from the tree trunk, Tree court should be used as night shelter	tree court,
	INDEGENOUS SETTLEMENT		dense settlement, different use of materials, colours	STP should be provided for surroundings settlement areas, proper solid waste management should be provided for indegenous settlement	STP
	STREET		pedestrian and vehicular not define, encrouched by vendors, unorganised traffic flow, unorganised roadside parking	street hierarchy should be redefine according to master plan, padestrian and bicycle track should be provided along all streets min 3m in width, seating should be provided along streets as pause points, façade material used along road must not construst with heritage stuctures, advertisement hoddings should not allowed along the road.	road sections, arrangement of amenities along the road,
INTERMEDIATE AREA	MONUMENT		Encroachment around the edge of those monuments, signages around monuments	any temporary or permanent construction not allowed around the monument edge, buffer space should be provide along the monument boundary walls on the road side and residential edges, proper signages should be provided along streets, street junctions, in front of monument.	add design elements along monument edges, signages design
	SACRED TANK	4	eutrofication, garbage dumping, surroung surface water fall in these tanks, some tanks are not been used,	No sewrage disposal allowed, No gurbage dumping allowed in the core heritage zone, storm water management system should be ehanced to protect sacred tanks from eutrification, some tank should be revitalised as a public space to promote awareness about heritage.	tank edge, suface drainage management, some tanks can reuse as public pause point for rest.
	INDEGENOUS SETTLEMENT		dense settlement, different use of materials, colours	STP should be provided for surroundings settlement areas, proper solid waste management should be provided for indegenous settlement	STP
	STREET		encrouched by vendors, unorganised traffic flow, unorganised roadside parking	street hierarchy should be redefine according to master plan, padestrian and bicycle track should be provided along all streets min 3m in width, seating should be provided along streets as pause points, façade material used along road must not construst with heritage stuctures, advertisement hoddings should not allowed along the road.	road sections, arrangement of amenities along the road,
ECOLOGICAL ZONE	SWAMP		sewage disposal, garbage dumping, no proper maintanance, reclamation, presence of invasive species	Restoration of swampland required and buffer zone of swamps to be used as public open space like nature walk, biodiversity park, etc.	open space design, retain this open space as ecological buffer
	NALLAH		brocken edges, channelised drain and encroachment on flood plain	Restoration of stream and swamplands. Buffer zone to be planted and protected	nallah edge, channel,
PERIFERIAL ZONE	MONUMENT	4	Encroachment around the edge of those monuments, signages around monuments	any temporary or permanent construction not allowed around the monument edge, buffer space should be provide along the monument boundary walls on the road side and residential edges, proper signages should be provided along streets, street junctions, in front of monument.	add design elements along monument edges, signages design
	SACRED TANK	2		No sewrage disposal allowed, No gurbage dumping allowed in the core heritage zone, storm water management system should be ehanced to protect sacred tanks from eutrification, some tank should be revitalised as a public space to promote awareness about heritage.	tank edge, suface drainage management, some tanks can reuse as public pause point for rest.
	SETTLEMENT		dense settlement, different use of materials, colours	STP should be provided for surroundings settlement areas, proper solid waste management should be provided for indegenous settlement	STP
	STREET		unorganised traffic flow, unorganised roadside parking	street hierarchy should be redefine according to master plan, padestrian and bicycle track should be provided along all streets min 3m in width, seating should be provided along streets as pause points, façade material used along road must not construst with heritage stuctures, advertisement hoddings should not allowed along the road.	road sections, arrangement of amenities along the road,

9.3 Proposals

9.2.1 Proposed Conservation Zones



9.2.3 Proposed Open Space Structure Plan



LEGENDS

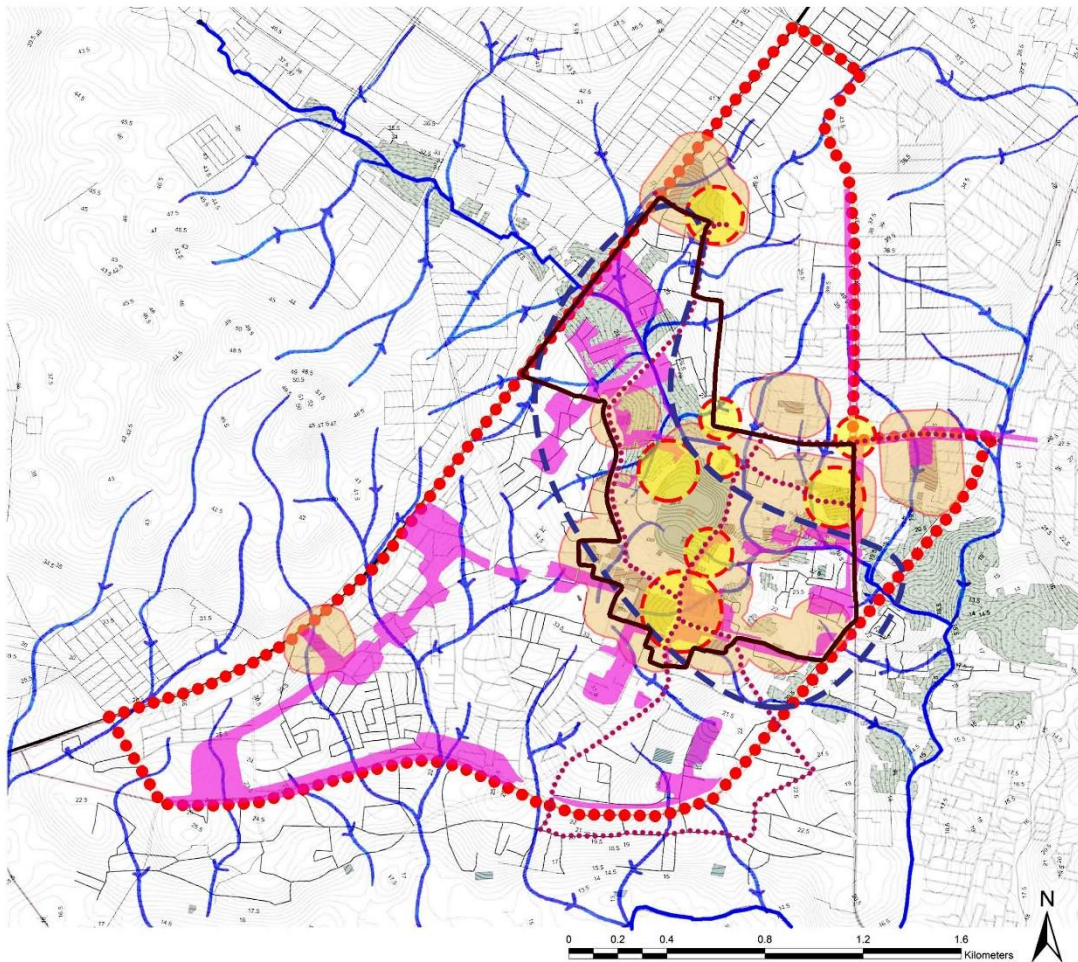
- VEHICULAR ROAD
- PEDESTRIAN & CYCLE TRACK
- CONTROLLED VEHICULAR ACCESS
- ⋯ NATURE TRAIL
- CONSTRUCTED WETLAND
- OPENSACES USE FOR TOURIST AMENITIES
- PLAY GROUND & PARK
- STREETS FOR ELEVATION CONTROL
- CORE HERITAGE ZONE

- ⋯ ROUTE OF RELIGIOUS NEED
- ⋯ LAKE PROMENADE
- PRIMARY NODE
- SECONDARY NODE
- PLAZA
- ENTRY TO EKAMRA KSHETRA
- ENTRY TO HERUTAGE CORE
- ⋯ PEDESTRIAN ENTRY TO HERITAGE CORE
- MAJOR AREA CONNECTED BY PUBLIC TRANSPORT



- CYCLE PARKING
- CAR PARKING
- TOILET AND DRINKING WATER
- FOOD COURT
- MAKE SHIFT AUTO STAND
- BATTERY CAR PARKING
- SHOP OF PUJA MATERIAL
- CLOAK ROOM
- MOTOR REPAIRING AND HARDWARE

9.2.3 Selection of Landscape Development Zone



9.2.4 Landscape Master Plan Strategy

Landscape master plan is based on three basic concepts they are blue connect, green connect and movement connect. Actually through this master plan, I am trying to connect all open spaces as a network as per the movement of the users. Water, open spaces and user movement combined together as a system of networks to emphasize the whole precinct as a pedestrianize tourist destination.

- Cultural heritage is encouraged through revitalizing the whole precinct connecting the available open spaces and emphasize the whole precinct seasonal colourful plantation associated with the seasonal ritual and festivals.
- Natural heritage is conserved through ecological planning of the marsh land and the tanks's ghats expansion.

- Sanitation improvement through storm water management, street tree planting, and constructing wetlands in the moat was suggested.
- Traffic management by separating high speed traffic from the pedestrian core, providing parking and other service facilities.
- The master plan offers an outline for conservation of Ekamra Kshetra's heritage through environmentally sustainable site planning proposals.
- The living traditions of temple worship, festivals, and rituals performed in the Bindusagar, Papanashini tank, Marichi kund etc. are very site specific, leading to the continuous connection of the public spaces.

9.2.5 Landscape Master Plan

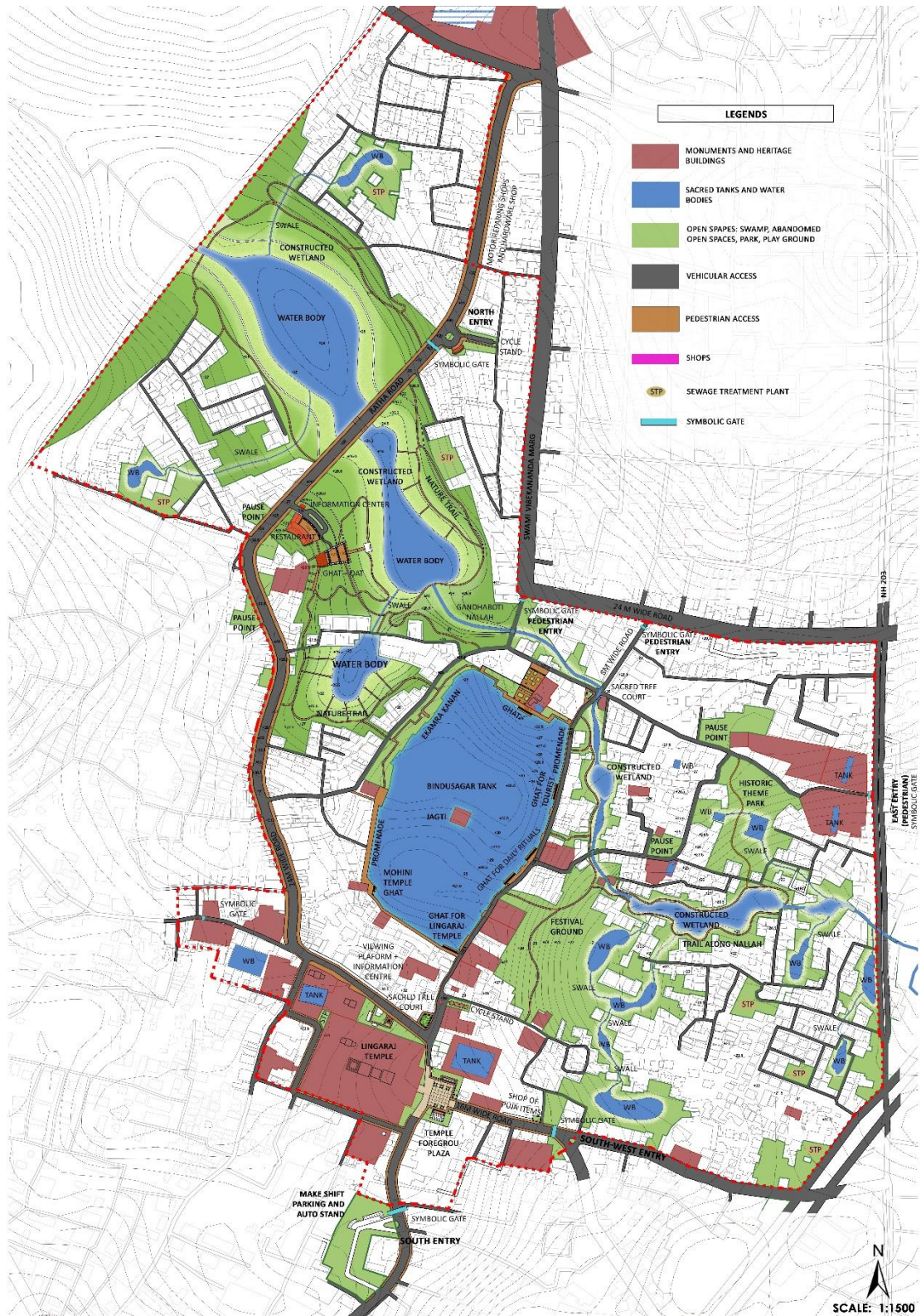


Figure 30: Landscape Master Plan

9.2.6 Landscape Master Plan- Planting Strategy

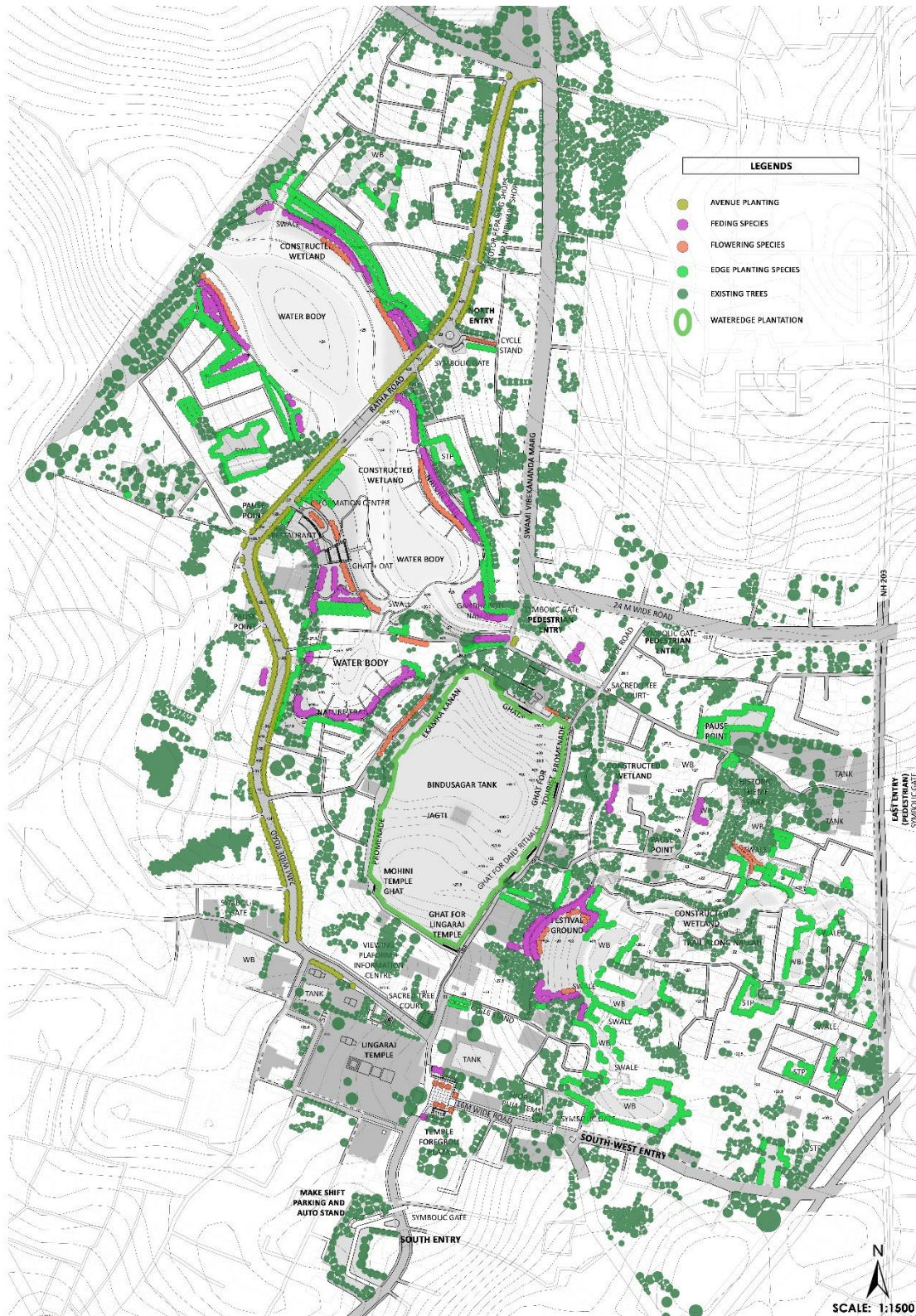


Figure 31: Landscape Master Plan- Planting strategy

CHAPTER 10: DESIGN SHEETS

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