

**TRANSFORMATION OF DERELICT TEXTILE MILL
LANDS INTO PRODUCTIVE LANDSCAPES – A CASE OF
INDORE MALWA UNITED MILLS LTD, INDORE.**

Submitted

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for the award of the degree of

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By

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Declaration

I Kapil Kumar, Scholar No. 2016MLA002 hereby declare that the thesis entitled: Transformation of Derelict Textile Mill Lands into Productive Landscapes – A Case of Indore Malwa United Mills Ltd, Indore submitted by me in partial fulfillment for the award of Master of Architecture (Landscape), 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.

17 May2018

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Certificate

This is to certify that the declaration of Kapil Kumar, is true to the best of our knowledge and that the student has worked under the guidance of the following panel.

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ABSTRACT

Industries are the wealth creators and are one of the major economy drivers, be it of any kind. In earlier days, when Industrial Revolution changed the world, India too was not left untouched by its effects. Industries of different kinds were being setup in different parts of the countries and the cities in which they were based, became a magnet for people with a scope of employment, access to different facilities & services and thus those cities witnessed a sudden growth.

But as circle of life suggests “what begins must end”, these industries also faced the decline in whole of the world and India. The most severely affected industries in India were the cotton textiles mills. As the mill operations became unsustainable due to various reasons & were declared sick, their closure led to economic crisis for the workers and their families.

These cotton mills which once were the lively setups, soon became graveyards of themselves. And such graveyards such were all over the country, be it in Ahmedabad or Mumbai or Indore. These cotton mills soon became derelict sites, being neglected by the society at large. Development around them carried on, while these “dead” landscapes were left behind to become victim of different factors like time, politics, vandalism among the major ones.

But now is the time when such neglected “dead” landscapes need to be revived again and be given the appropriate place in the society for not just their contribution in the development and growth of the society at its present condition but also because these unique landscapes are the examples of an era from where the Industrialization began, they are the predecessors of this whole process of Industrialization.

The thesis proposal looks forward to exploring and design an abandoned industrial site, which has a history and a major role in development of the society at large. But with the gradual passage of time and advancement of technology it became obsolete and has been shut down or abandoned. Thesis proposal will aim to propose a landscape programme for the site which has an industrial character and will try to explore best possible ways to reuse the site through different landscape design interventions and strategies of varying degrees but approached in a holistic

manner for imparting the site a different purpose altogether while preserving its essence and giving it back to the city as a space which can be utilized or experienced in different ways while catering to aspects like – economic(productive) , environmental , recreational and historical aspects of the site.

Also, on a broader level thesis aims to propose landscape design scheme to interconnect the different mill lands to each other to create a network of green open spaces which satisfies different concerns like environmental, social, functional and economic.

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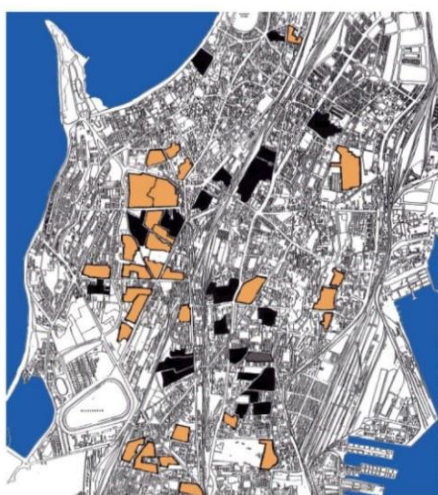
CHAPTER 1: INTRODUCTION

1.1 Background

Industries, of any kind are wealth creators & one of the major economy drivers. Industrial Revolution led to modernization of industries in different parts of the countries and the cities in which they were based, became a magnet for people with a scope of employment, access to different facilities & services and thus those cities witnessed a sudden growth.

But as circle of life suggests “what begins must end”, these industries also faced the decline in whole of the world and India. The most severely affected industries in India were the cotton textiles mills. As the mill operations became unsustainable & were declared sick, their closure led to economic crisis for the workers and their families.

These cotton mills which once were the lively setups, soon became graveyards of themselves. And such graveyards such were all over the country, be it in Ahmedabad or Mumbai or Indore. Development around them carried on, while these “dead” landscapes were left behind and were allowed to become victim of different factors like time, politics, vandalism among the major ones.



Above image showing the location of Textile Mills in Indore City.

Left map showing of textiles Mills in Mumbai City.

Figure 1 Image showing the distribution of mill lands in Mumbai and Indore city

But these neglected landscapes need to be revived again and be given the appropriate place in the society for not just their contribution in the development and growth of the society at its present condition but also because these unique landscapes are the examples of an era from where the modernization of Textile Industry began, they are the predecessors of this whole Industry process.

1.2 Project justification

Though the curtains have been brought down for Indore Malwa United Mills and other cotton mills in Indore, yet it is still relevant in many aspects – be its location in the city or its undeniable contribution in development of the city or the fact it is one of the few remnants of its own kind on the whole city fabric.

The need of the hour is to preserve the history of such a site which is of Industrial character – having a strong individuality of its own on the entire city fabric and whose contribution or significance have been etched in the memory of people associated with it in some way or the other.

And thus because of this association of site with the people, it is essential to preserve its essence and offer such a site, back to the city and its people for not just recreational purpose but for other uses as well, while interacting with remnants of an industrial setup which once was an important part of their lives.

1.3 Aim

Transformation of a derelict textile mills into productive landscapes by proposing landscape design and strategies satisfying 4 essential aspects, namely 1) Social, 2) Functional, 3) Environmental and 4) Economical.

1.4 Objectives

- To study historical development of Mills in India and Indore, the reasons for their growth & decline and current situation of the Mill Lands in Indore.
- To study the site and its context in different aspects like – natural, social and economic while identifying the different issues involved and assess its viability for reuse based on different criteria.
- Identify and focus on the important values of landscape such as ecological, experiential, visual, aesthetical and determine the scope of intervention on the

site that will emerge from context studies and literature, best practices involved etc.

- Identify the criteria, related concepts and theories that will assist in the development of the thesis proposal in a holistic manner.
- Make an inventory of spaces – both built and unbuilt – of varying scales and segregate them based on different parameters like – usability, structural strength, visual value etc.
- To provide for proposals of landscape and planning nature for the unbuilt open spaces to resolve the identified issues and a scheme of usability for built spaces & prepare different sets of layers for the proposed landscape design scheme.

1.5 Methodology

- Site selection criteria
 - probable site options.
 - SWOT analysis of each site.
 - selection of site on basis of accessibility.
- Background study – Historical development of site along with city.
 - Internet study.
 - Books.
- Preliminary site visit - to know about the site and its setting in the city.
- Primary Data collection -
 - Interviews & survey, localized stories about the mill lands in the community.
 - Visual analysis through images clicked.
- Literature View - Research Articles/Papers on similar kind of projects researched around the World.
- Secondary Data collection -
 - Demographics (Census).
 - Landscape assessment in respect of climate, rainfall, geology, soil, hydrology, flora and fauna.
 - LULC Map.
 - Land ownership map.

- Government proposals for the site if any. Like smart city proposal or any other – through agencies or newspaper articles.
- Different layers through GIS – contours, slope analysis, hydrology etc.
- Site visit – thorough site analysis for issues identification.
 - Open spaces mapping in and around the mill land area.
 - Prepare an inventory of mill land in the area and present status and condition.
 - Prepare an inventory of existing structures on the chosen site based on their structural condition.
 - Identifications of various issues involved – either social, environment or natural – by observation or interviews.
- Case studies analysis -
 - Analysis of case studies of similar projects - Gas Works Park, Seattle; Highline Park, New York; Parc de Bercy, Paris; Tate Modern, London; Battersea Power Plant, South West London.
 - Case studies on the issues identified, if not addressed in the above-mentioned case studies.
 - Live case study if any identified.
- Inferences derived on the analysis of primary and secondary data gathered.
- Site visit to corroborate the inferences and to guide & assist the conceptual design scheme.
- Design Proposal.

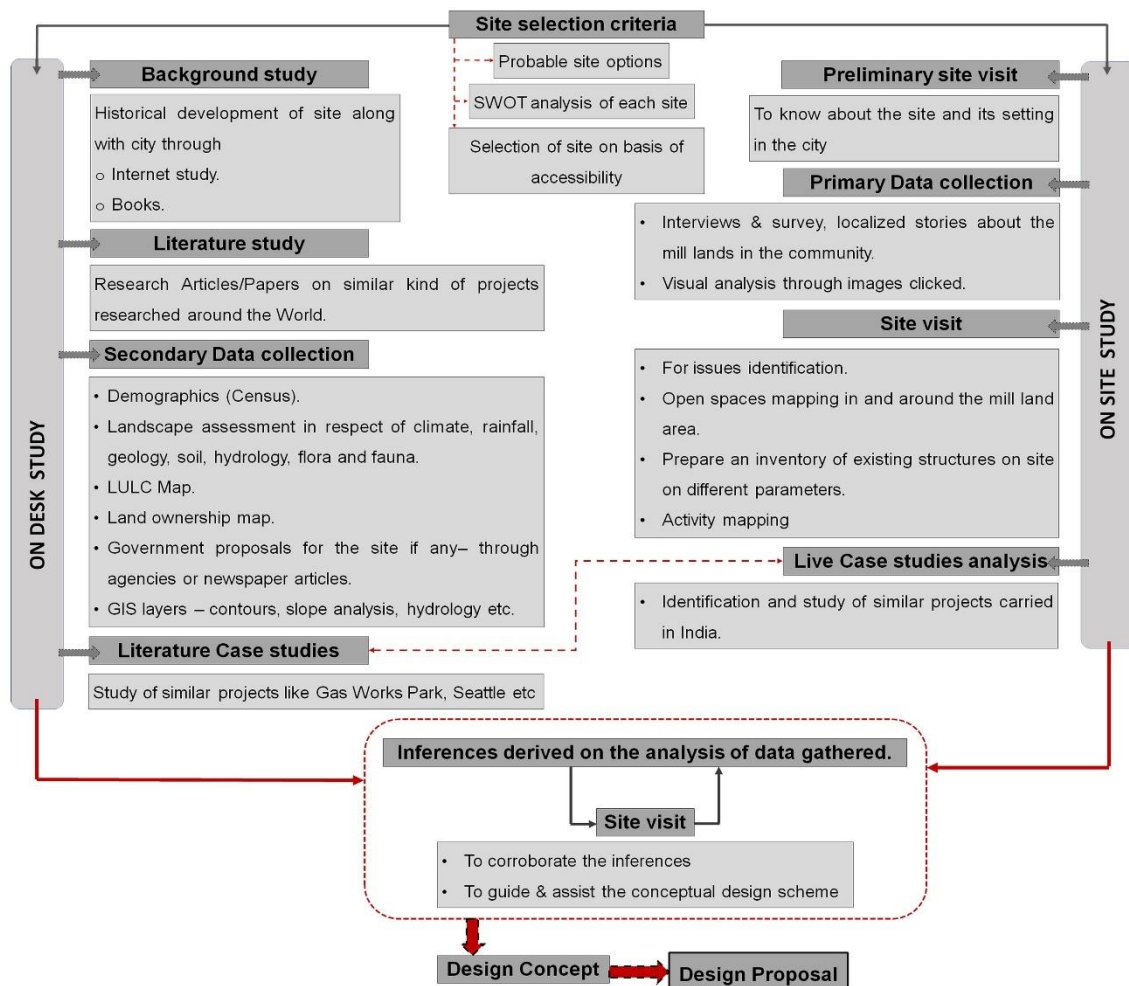


Figure 2 Methodology Flow Chart

1.6 Scope and limitations

1. The thesis proposal in context of site will focus on conceptualizing and designing outdoor spaces of varying scale suitable for different activities apart from incorporating existing structures in either of the two ways i.e. Actively, by assigning some functions or activities to them or Passively, by using them symbolically for their historical importance.
2. On the city level thesis proposal will deliberate on conceptualizing the inter connection of the proposed urban green spaces.
3. Being a landscape design thesis, the site under consideration would be dealt in detailed manner while in the adjacent areas only a broad level planning would be proposed.
4. Also, in case of any existing built structure on site, the proposal would only suggest their schematic use in line with the broad proposal where as its

structural suitability or structural conservation would be outside the scope of design proposal.

1.7 Outcome

The outcome of the thesis proposal would be multifold.

- Firstly, on the site level, the proposal will explore the possibility of a productive landscape having multipurpose usage over a contrasting industrial character of the site while incorporating the existing industrial built space. The proposed spaces will try to resolve the identified issues and be dynamic in nature, changing according to the needs or activities while maintaining the essence of the site.
- Secondly, on the city level, with the development of the site, there is another possibility of proposing the similar design scheme for the rest of derelict Mill lands and interlinking them to each other to form a network of productive landscapes providing a sequence of diverse experiences to the users.
- Thirdly, it will apprise all the stakeholders about such projects, their feasibility and their immense potential which can be harnessed to create urban productive landscapes and their network on the fabric of the city. It will stimulate a thought process and/or a dialogue that needs to be undertaken for projects of this kind on a large public scale while apprising various stakeholders about the long term gains – be it on community level, ecological levels or economic.
- Fourthly, it will explore the possibility of developing such a prime land in the core of city into productive landscape trying to generate revenues to make the design scheme economically viable while providing the city with multipurpose spaces which can be utilized to fulfill for recreational or cultural or even educational needs of the city.

- Also, the thesis proposal being a landscape one, will focus and explore the possibilities of transforming the outdoor spaces in creative manner while providing with the proposed uses of existing built structures.
- Lastly, the role of landscape architect will emerge out as an author of creative and innovative strategies in reclaiming such derelict landscapes in the city and providing them for different purposes which will further the dialogue of their relevance in various decision-making authorities engaged in planning and management of a city.

CHAPTER 2: LITERATURE REVIEW

As the thesis aims to transform the derelict mill lands into productive landscape on these grounds namely - Social, Functional, Environmental and Economical- it becomes imperative to ascertain as to how these goals can be achieved together without compromising on any of these aspects. Therefore, a theoretical study and analysis of certain theories and their component is necessary to shape up thesis by identifying possible interventions. The study of these approaches is essential for some of them will have direct bearing on the outcome of thesis in terms of design while some will have indirect yet essential and noticeable bearing on thesis by means of complimenting the design scheme so developed.

2.1 Adaptive Reuse

Adaptive Reuse pertains to reusing or recycling of a space - built or unbuilt or even both - which has been abandoned or shut down for different reasons. A theoretical approach towards adaptive reuse was only established in the 19th century when Eugène Emmanuel Viollet-le-Duc (1814–1879) recognized adaptive reuse to preserve historic monuments. He argued that *“the best way to preserve a building is to find a use for it, and then to satisfy so well the needs dictated by that use that there will never be any further need to make any further changes in the building”*. (Cleempoel, n.d.)

For understanding and applying the concept of Adaptive Reuse, 3 main approaches can be distinguished:

- I. Typological - in this approach probable buildings/sites are organized according to their type – like industrial, religious, military, etc.
- II. Technical - in this approach probable buildings/sites are organized according to the technicality involved like building structure and envelope, safety, energy efficiency, etc.
- III. Architectural – this approach is based on the idea of the palimpsest which explains the concept of conversion by means of transformation, conversion, addition.

In conjunction with the above-mentioned approaches there are some considerations or strategies which are fundamental to the concept of Adaptive Reuse – *Minimal Intervention, Transformation* (Innovative use of the existing element/Introduction of New element or Subtraction of an unusable element), *Modernization, Quality Enhancement* – *Experiential /Visual, Preservation of essence of the existing conditions, Conversion to a new use which is sustainable.*

2.2 Industrial Archaeology

Industrial archaeology is that branch of archaeology that deals with the concepts and procedures of human industrial organization and labor. It is recently developed field of study. The reason for its development was the massive demolition of the remaining physical structures of historic industries to accommodate urban spread. There are different techniques and methods applied by industrial archaeologist but accurate on site recording is very essential to the whole concept. Its also includes documentation and interpretation of the remains, adaptively reusing the structure where possible and their management. In application this approach has been majorly applied only on the study and documentation of mechanized industry and its related products dating back to Industrial Revolution. ((Deceased), n.d.)

In essence, industrial archaeology is by definition an interdisciplinary method of studying the industrial past and its assimilation in present day scenario. This field has contributed in many ways by first acknowledging the idea of Industrial heritage and its subsequent preservation by means of thorough scientific documentation of past. This approach starts by bringing clarity as what can be considered as industrial heritage and on what criteria it needs to be evaluated and methodology for its preservation. Protecting an area or a built structure is the second step. While the next step is to find a reason to validate or justify the preservation of industrial sites.

This issue encompasses urban planning and demands a detailed study establishing potential historical and cultural value. This further confirms the interdisciplinary nature of the field. Thus, Industrial archaeology is an important means for bringing together different areas of specialization for a holistic understanding and enhancement of heritag. (Campangol, 2011)

2.3 Degraded landscapes and their restoration

In certain cases, the degradation of land might become so severe that it requires a rehabilitation or restoration activity to maintain or lessen the degradation or to improve/stabilize the productive/environmental value of the land. Generally, stabilization of degradation is preferred over restoration of ecosystem that existed before. Also, in case of severely degraded lands, restoration rarely brings back the ecosystem that existed before, severe degradation might result in permanent loss of biodiversity associated with that area. (Hutchings, n.d.)

Degradation generally takes place in two ways. In first scenario, one or continues serious of rapid catastrophic events bring about the change like over grazing, mass clearing or drought or combination of these factors. In second scenario, degradation may take place slowly over a long period of time thought activities like grazing, removal of native plant species or allowing invasive plants. Constantly increasing/decreasing water tables or increased salinity from clearing and irrigation are a few example of slow degradation processes. (Hutchings, n.d.)

Leaving the site alone for long enough, it may recover to some extend on its own, but rarely attains its original state. Also, degradation will worsen before getting better and thus might require intervention to change the trend.

There are four key aspects to a restoration project:

1. Recognizing *cause* and *effect* and targeting the cause;
2. Site stabilization;
3. Environmental reconstruction, and;
4. Monitoring. (Hutchings, n.d.)

2.4 Brownfield Reclamation

Brownfields are sites that:

- have been severely impacted by the former use and or function of the site and surrounding land.
- are derelict or under used
- have real or perceived contamination complexities of varying scales
- are mainly located in densely developed urban areas
- require intervention to make them productive and of beneficial use. (Dr. Uwe Ferber, May 2006)

To understand and apply the concept of brownfield redevelopment, it's essential to remember that each site has with its own unique combination of historical function, location, environmental issues and future potential. These factors can work in favor or against a brownfield's remediation and redevelopment potential. (Ministry of Environment, 2007)

Brownfield remediation and redevelopment achieves many important goals including the following:

- Promotes regional economic development, particularly in large population centers, with accompanying urban redevelopment;
- Increases quality of life through neighborhood revivification, reduced urban pressure, and conservation & consolidation of green space;
- Lower downs environmental contamination and site hazards, thus improving overall public health and safety. (Ministry of Environment, 2007)

2.5 Recreational landscape design

As the Industrial Revolution progressed, a unique demand for recreation originated from the middle and lower classes. This demands for recreational needs started the development of national part where beautiful scenic views coupled with wildlife protection became new opportunities for recreational spaces. The increase in the ownership of car by masses propelled this demand further, as the far-off places become easily accessible, people became for adventurous in their activities.

In 1901 John Muir wrote:

Thousands of tired, nerve shaken, overcivilized people are beginning to find out that going to the mountains is going home; that wilderness is a necessity; and that mountain parks and reservations are useful not only as fountains of timber and invigorating rivers, but as fountains of life. (Bell, 1997)

Thus, the Theory of “Escaping from the city” was formulated according to which there was a belief held by masses that cities are somehow not good for us and our well-being and for a holistic wellbeing of not just our body but of our soul too, we need to escape from chaos of city, to associate ourselves with nature ,to ‘get in touch with the nerve of Mother Earth’, as John Muir phrased it. (Bell, 1997)

Since humans have always been afraid of absolute wilderness of the nature, thus to provide an escape from the city the idea of “Modified” outdoor recreation was developed which was achieved by landscape design meant of recreational purpose.

2.6 Productive Landscape

Productive landscapes can be conceived as an integration of landscape architecture and industrial processes which are more inclined towards agriculture type of processes like horticulture or floriculture. Understood in this manner productive landscape, thus will not only become centers of production and economic benefits, but also multipurpose spaces that will be used and managed by the communities in diverse ways.

Andre Viljoen and Katrin Bohn in their book CONTINUOUS PRODUCTIVE URBAN LANDSCAPES: DESIGNING URBAN AGRICULTURE FOR SUSTAINABLE CITIES have defined Productive landscapes as *open space (mostly urban) planted and managed in such a way as to be environmentally and economically productive, for example, providing food from urban agriculture, pollution absorption, the cooling effect of trees or increased biodiversity from wildlife corridors.* (André Viljoen, 2005)

2.6.1 Urban Agriculture

agriculture which occurs within the city.

- *in most cases high yield market gardens for fruit and vegetable growing.*
- *found on the ground, on roofs, facades fences and boundaries.*
- *if economic conditions are difficult, likely to include small animals.*
- *developing to include aquaculture (fish production).* (André Viljoen, 2005)

Urban agriculture can be understood as the raising of plants (vegetables) and trees (fruits etc) in or around a city. Peculiar thing about Urban agriculture is that it is integrated with urban economics and urban ecological system – supporting and being supported by the urban ecosystem. It's different from rural agriculture in the way that it is not isolated from its users – its more embedded within its user network.

2.6.2 Organic Farming

It is an farming approach which primarily aims to cultivate farmlands and raise crops in a way that the soil doesn't loses its fertility over the period of time and instead of chemical fertilizers , the nutrient supply to soil is managed by the use of organic waste materials like animal waste , farm waste, any other bio degradable waste materials along with naturally occurring microbes (biofertilizers) to make sure the continuous supply to crops for enhanced sustainable production in an ecofriendly manner which is beneficial to environment. (TNAU, 2016)

According to the United States Department of Agriculture (USDA) study team's definition on organic farming "*it is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection*". (TNAU, 2016)

FAO suggested that "*Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs*". (TNAU, 2016)

Benefit of organic farming

With the continuous increase in population worldwide, it has become necessary to not only stabilize the food production but to enhance it in a manner which is more environmentally sustainable. It can now be said the agriculture production worldwide has reached a threshold which is more demanding in terms inputs like fertilizers, chemicals etc while output of such farming practice is dwindling due to various factors like plant diseases or pest attacks etc. Therefore, the time has come when agriculture all over the world embrace sustainable agricultural practices which are more in sync with our environment and put less burden on the natural resources while using our bio degradable wastes which are of immense volumes.

The key characteristics of organic farming include

- To maintain the organic contents of soil and encourage biological activity in soil, to safeguards the long-term fertility of soils.
- To provide nutrient indirectly in inactive form or sources which are broken down by soil microorganisms to be made available to plant.
- Biological nitrogen fixation using legumes along with proper recycling of organic materials like crop residuals and livestock manures.
- Using natural ways to deal with weed, disease and pest using natural predators, organic manuring etc and using less of chemical pesticide or herbicide
- extensive management of livestock, paying full attention to their evolutionary adaptations, behavioral needs and animal issues in respect of nutrition, housing, health, breeding and rearing.
- Assessing the impact of farming system on natural ecosystem and its management. (TNAU, 2016)

2.6.3 Vermicomposting

Vermicomposting is a method of composting in which selective species of earthworms are utilized to increase the rate of decomposition of organic water and produce a highly nutritious product towards the end. It is a mesophilic process being carried out by micro- organism and earth worms. These organisms feed on

the organic waste products, digest them and throw them out, this the resultant outcome is called vermicompost. (Zafar, 2016)

In simple words it is nothing, but the excrement of earthworms also called castings, which helps in improving biological, chemical and physical characteristics of the soil. The chemical enzymes in earthworm's digestive system help in breaking down the soil and organic matter, thus these castings have higher amount of nutrients which is readily available to plant for their growth. (Zafar, 2016)

Applications of Vermicompost

- The vermicompost has higher amount of macro and micro nutrients as compared to garden compost. Apart from these, a earthworm's casting is rich with NPK which are available in ready form to be taken up by the plants. Vermi compost increases the growth of plant, decrease plant diseases, increases the porosity and enhances microbial activity in soil while improving its water retention capacity and aeration.
- It is also helpful for the environment in three ways, first of all itself it is an organic process without any polluting residual, secondly its helps in reducing the dependency on artificial chemical fertilizers and thirdly it reduces the amount of waste findings it to landfills. The trend of vermicompost production is increasing in countries world over.
- A variant product of vermicompost is vermicompost tea - it is a liquid generated by extracting organic matter, microorganism and nutrients form the castings. This product can directly be applied on plant foliage to suppress any plant disease. It can also be used on soil to increase the biological process in the soil. (Zafar, 2016)

2.6.4 Horticulture

It is the art and science of raising plants (vegetables, fruits, flowers etc) for economic and environmental purposes. It also encompasses plants conservation and propagation, landscape design and restoration along with soil management practices.

2.6.5 Floriculture

Floriculture means flower farming and it encompasses the growing and marketing flowers and/or foliage. The purpose of cultivation of flowering and ornamental plants can be – for direct sale in market, as raw materials in cosmetic and perfume industry, in pharmaceutical sector as well. It also encompasses production and propagation of planting material through different techniques like – seeds, cuttings, budding and grafting. (Project Manager, n.d.)

Floriculture is being practiced in India since ages, it has huge potential in respect of generating profitable self-employment for small and marginal farmers. In recent times it has emerged out to be profitable agro- based industry in not just in India but world over as the continuously improving standards of health and living and growing concern among people to strive for environment friendly atmosphere has led to a multifold increase in product offered and catered to by this industry. There has been an exponential growth in this sector over the past 10 years. (Project Manager, n.d.)

In context India, major components of floriculture industry are flowers trading, production and management and marketing of plants in nursery plants, seed and bulb production, micro- propagation along with extraction of essential oils. Even as the annual demands for various kind of flowers is growing at a rate for over 25%, India's share in this multi-billion industries of flowers is negligible. However, India has a better chance in future as the trend in this industry in shifting towards tropical flowers and given this condition, India has a bright future given its large biodiversity in native flora. (Project Manager, n.d.)

2.7 Summary of Research Papers

S.No.	Title	Author	Source	Yr	Remarks
1	Restoring Dead Places	Chris Baines	Built Environment (1978-), Vol. 6, No. 3, Tidying Up the Environment (1980), pp.197-201	1980	Instead of focusing only on the visual aspects of a landscape, while designing a landscape architect must think about imparting a more richer experience to the user by paying attention to the existing topography, ecology and human use patterns, especially in those site which have been neglected or were being used differently before.
2	The Identification of Industrial Heritage Sites in Scotland: Towards a National Strategy	Ian Johnson	Built Environment (1978-), Vol. 19, No. 2, Industrial Heritage and Tourism (1993),pp. 105-115	1993	There is a need to understand what Industrial Heritage is, which requires a specialised and dedicated framework through which such site or landscape can be identified and prioritized depending upon the scale of intervention required for their preservation.
3	In search of authenticity: a case examination of the transformation of Alabama's	Abel Duarte Alonso, Martin A. O'Neill and	Journal of Heritage Tourism	2009	When curtains are drawn on any industry, it has far reaching effects on the workers and their family in terms of economics. But

	Langdale Cotton Mill into an industrial heritage tourism attraction	Kyungmi Kim			given the authenticity of such industrial sites and experiences associated with them ,tourism potential can also be exploited to mitigate the effects of the closure of Industry. The point is to include the community in the planning, development and execution stage so as to make the project viable for long term.
4	Redevelopment of Industrial land in Urban Areas: Opportunities and Constraints, A Case Study of Textile Mill Land Redevelopment In Mumbai	Ramakrishna Nallathiga	Theoretical and Empirical Researches in Urban Management, Vol. 5, No. 5 (14)(February 2010), pp. 35-46	2010	The redevelopment of mill lands must take place in such a way that apart from being commercially viable, it must cater to the public interest at large.
5	Of Mills and Malls: The Future of Urban Industrial Heritage in Neoliberal Mumbai	Manish Chalana	Future Anterior: Journal of Historic Preservation, History, Theory, and Criticism, Vol. 9, No. 1 (Summer 2012), pp. 1-15	2012	In India generally the big and glamorous monuments are preserved. While at the same time it is essential to preserve the derelict Industrial sites and structures because they represent the contribution of those people who have been affected by their closure and now in the time of development have been marginalised.

					Also in themselves they represent their contribution in the development of city to its present condition. but the preservation must not be one sided - but must be realistic - catering to both aspects - growth & development and preservation.
6	The greening of urban post-industrial landscapes: past practices and emerging trends	Christopher De Sousa	Local Environment: The International Journal of Justice and Sustainability	2014	Any redevelopment of Post Industrial sites must take into account a large base of different stakeholders to make the project sustainable - either in short or long-term scenario. Since funding for different aspects of redevelopment is a major issue, therefore a balanced approach of public - private partnership is more viable than just public park project as it will create multiple objectives to be achieved catering to different stakeholders, thus making the project interesting and economically viable.
7	Joint ICOMOS – TICCIH Principles for the Conservation of Industrial Heritage Sites,	ICOMOS General Assembly	ICOMOS	2011	Internationally there is a concern and necessity felt to conserve, preserve, documents, appreciate and promote the

	Structures, Areas and Landscapes				Industrial Heritage. And of what all Industrial Heritage is composed of.
8	Industrial Ruination, Community, and Place: Landscapes and Legacies of Urban Decline	Alice Anastasia Mah	Toronto: University of Toronto Press	2014	The book is comparative analysis of 3 distinct derelict de-industrialized communities – Niagara fall in Canada/USA, Walkerside, New Castle-upon-Tyne, UK and Ivanovo Russia. It studies the effect of de industrialization on surrounding community.

Table 1 Table showing concluding remarks for different research papers

CHAPTER 3- CASE STUDY

3.1 Viet Village Urban Farm

3.1.1 Project Basics

Location: New Orleans, LA

Client: Mary Queen of Vietnam Community Development Corporation

Design Team: Mossop + Michaels

3.1.2 Background and Design Intent

Viet Village Urban Farm is an urban farming project located in New Orleans East, which was hit by Hurricane Katrina. The location is in the northeast edge of the city. (Michaels, 2008)

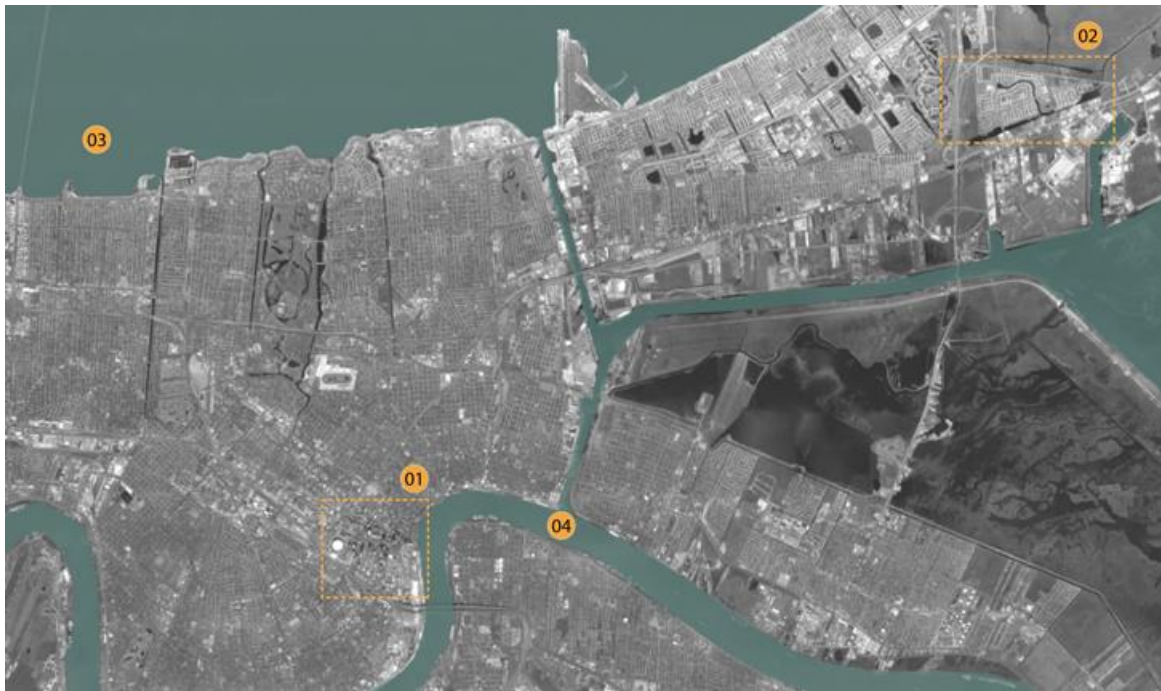


Figure 3 Map showing the location of Viet Village

This project's genesis was to create a locus for cultural interaction within the local Vietnamese community and has developed into a strategy for sustainable economic development and environmental innovation. It includes community gardens, commercial farming plots, a major livestock facility, market pavilions, play areas and sports fields, recycling center and a central water collection and management system. (Michaels, 2008)

Before the Hurricane Katrina struck, community was engaged in farming over 30 acres. There was also an established network of informal markets in the community where the excess produce was sold by the local growers. Therefore, new design scheme incorporates these two aspects – farming and farmer's market.

The proposed new farm is in a dense urban fabric, a tradition in urban farming followed by Vietnamese immigrants to raise crops not locally available. The new farm will employ sustainable techniques of irrigation thus reducing the need of energy. (Michaels, 2008)



Figure 4 Image showing schematic proposal

Organic crops grown on the field will be sold at new market proposed on same site accommodating people who used to visit the place before Hurricane Katrina hit the place.



Figure 5 View of the spaces in proposed farm.



Figure 6 A walkway through proposed farming area

The project has been divided into different phases, first being the development of farm lands plot and a central reserve of water to irrigate the farms lands. The next phase will include the establishment of solar or wind system to take care of energy requirements. (Michaels, 2008)



Figure 7 Food grown in farmlands will be sold in market on the site itself

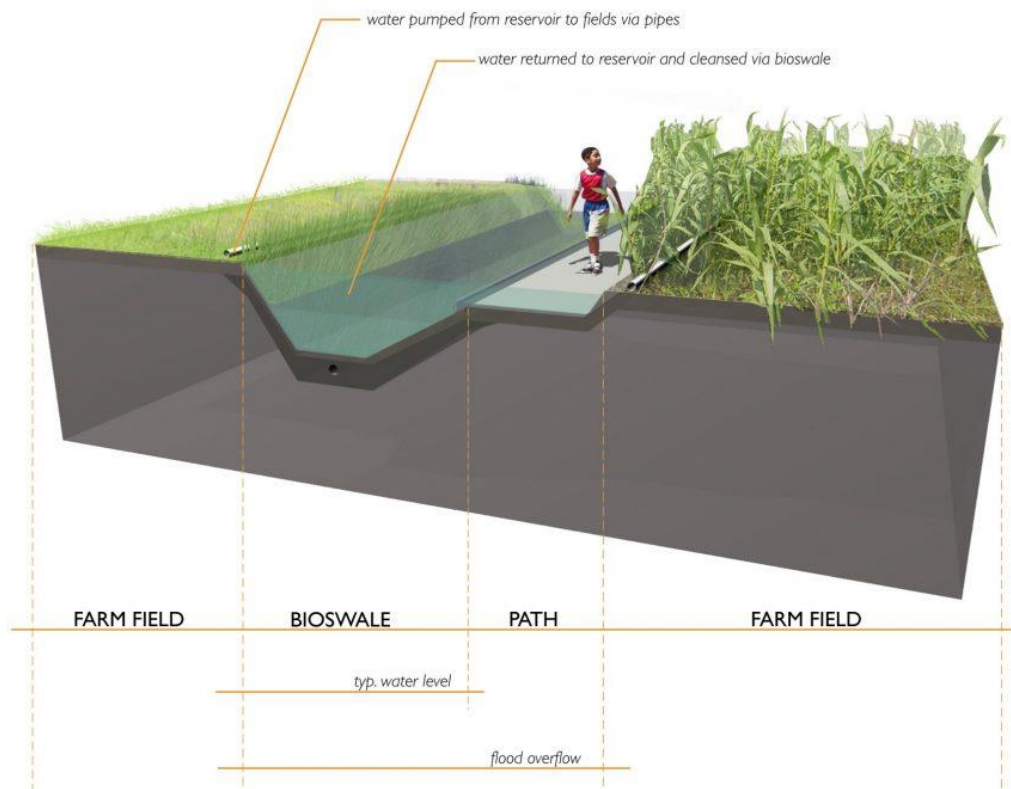


Figure 8 Cross section showing the working of the farmlands

The crops grown organically on the farm will be sold at the new market built for farmers on the farm itself (can be seen in back background). It can accommodate 3000 shoppers at a time.

The cross section in Figure 8 show the arrangement of – farm plots, walkways and irrigation system being employed. The water is pumped from central reserve to the farmlands via wind mill system. The excess water flows into the bioswale which filters the water naturally with the help of soil and plants as its flows back into reservoir. (Michaels, 2008)

3.2 Gas Works Park

3.2.1 Project Basics

Location: Seattle, Washington, USA

Client: Seattle Parks Department and City of Seattle

Design Team: Richard Haag Associates

3.2.2 Background and Design Intent

Gas Works Park in Seattle, designed by Richard Haag Associates, can be said to be the first example of a post-industrial landscape being transformed into a public park. The revolutionary nature lies in its adaptive reuse of waste landscapes and built mass, not just improving the contaminated land but metamorphosing it to serve the public.

In the beginning the official and citizens were inclined towards removing the industrial plant, but Haag Associates managed to convince them to retain the industrial plants while retaining and cleaning the polluted soil.



Figure 9 View of the Gas Works Park

Haag embraced the industrial ruins and translated their presence into defining features of the park, thereby offering an alternative reading of Seattle's industrial past, not one to be forgotten but to be remembered and respected.



Figure 10 Gas towers have become a focal point for the whole site.

The gas towers suggest a history of Seattle focused not only on the natural resources of mountains, forests and water, but also on urban industrial ventures of previous eras. The public was invited in the industrial landscape by Haag to engage & make them think that they may find it very beautiful and a new experience. The towers remained as rusted icons to a new way of conceiving post-industrial excesses as potential places of public engagement, recreation, contemplation and learning.

The well-known story of how Haag led the design effort generally focuses on two facets of development: the decision to retain elements of the industrial structures and the role of the public in the design of the park. Missing from these narratives are three important histories that are critical to how the park is experienced today. The first aspect is about how Haag managed to change mindsets of Seattle's residents and leaders, the second was Haag's inclination for using bioremediation

methods to reclaim the polluted soils and water while the third facet is about representing the landform as – an art form and a way of storytelling.

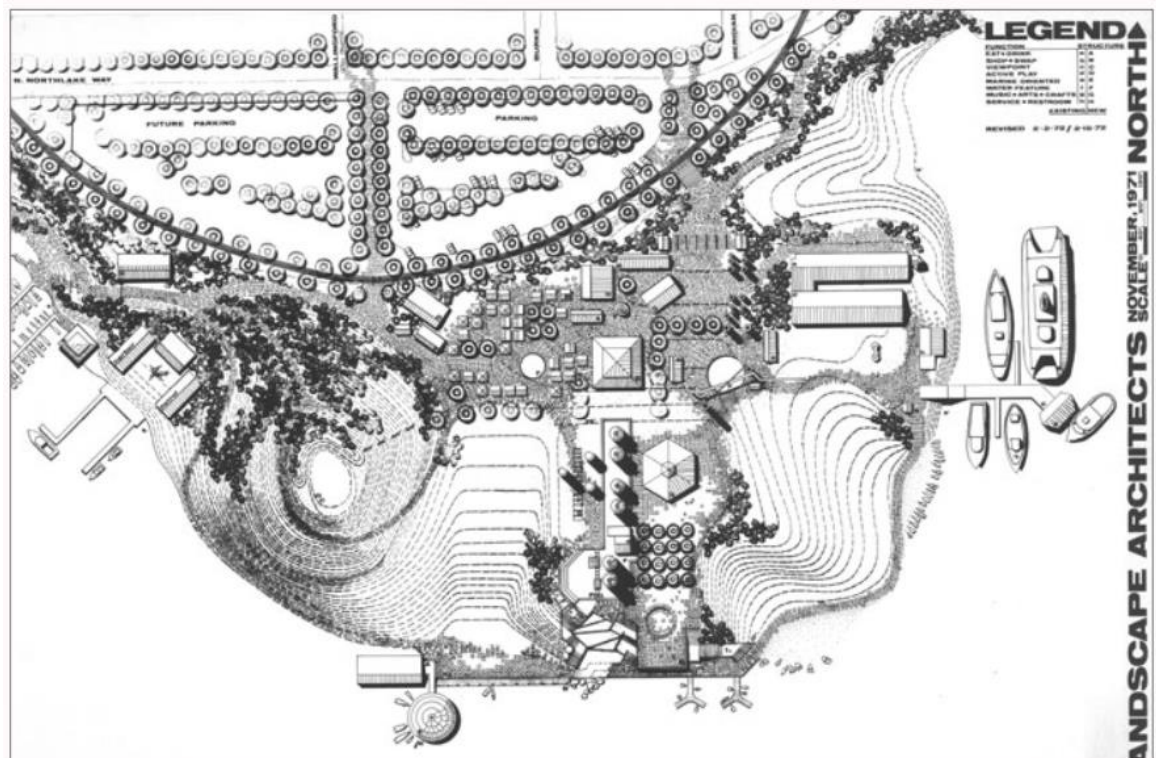


Figure 11 Proposed Map showing different spaces in the park

Recalling this history of land forming, Haag re-shaped the promontory to serve as a microcosm of Seattle. He created hills where there had been flatness, and valleys where there had been



Figure 12 Spiraling and criss crossing walkways made the park accessible for everyone.

marshes. Where others leveled the land, Haag honored the region's native topography. The result? A topographically complex landscape.

With forest in the background, water in the foreground and a landscape of hill and mountains framing panorama of the city and its culture, Gas works Park appears as a live model representing the Seattle's historical topography at a human scale.

Accessing the Great mound or the Kite Hill via spiraling path opens a view with water in the foreground as the urban setting of city dots the sky. These are the histories of Seattle: the settling of a city in the hilly landscape, the struggle to level the city site, the aspirations of the twentieth century and the industries of gas and fishing, as well as logging and high technology. Haag moulded the landforms to carry water and to serve the community, to perform as part of natural and cultural processes.

The park's design incorporates Seattle's most unique and characteristic icons—the water and the coastline running along, trees with forests, the hills and mountains—only in this interpretation, they are not just land elements, but are soaked with memories.

The towers attest to the industrial past, its scale, its presence and its traces (Meyer 1998). As they rust, they recall the decay that is a part of the process of aging. The Great Mound, cloaked in what first appears as innocuous green lawn, contains the site's worst toxic residues. From the top one sees all that Seattle has been.



Figure 13 Modification of terrain has led to creation of interesting view points

3.3 Summary of other Case studies

S.no.	Project	Location	Designer	Remarks
1	Landscape Park Duisburg Nord	Duisburg, Germany	Latz + Partners	The Project's site is a 570-acre former steel plant, which now remains abandoned. The landscape architect's vision included the reuse of the industrial set up for different purpose while reclaiming the land for the larger public use. What would have been considered as disturbed and complex issues that need to be demolished or restructured, were treated as the attractive and positive tools by the designers. Their aim was to revive the industrial landscape by minimal intervention to preserve the integrity of site, reusing and representing the decaying industrial objects into

				symbolic viewpoints which are now witness of a once flourishing industry. (LATZ+PARTNER, n.d.)
2	The Red Ribbon in Tanghe River Park	China	Beijing Turen Design Institute and Peking University Graduate School of Landscape Architecture	Tanghe River park's site is located largely along the edge of a degraded beach made inaccessible by continuous garbage dumping. The problem was aggravated by the presence of patchy slums. The vision for the project was to restore much of the natural edge along the river increasing the natural vegetation. (Turenscape, n.d.)
3	Houtan Park	Shanghai, China	Turenscape	Houtan Park located on the Shanghai's Huanpu Riverfront, has been built on former industrial brownfield site. To reclaim the degraded water edge in a visual and sensory appealing manner, the design strategy for the park included components like constructing a wetland to maintain the flood control in ecologically

				<p>manner, reusing industrial structures and materials available on site and urban agriculture to make the scheme economically productive. (Yu, 2010)</p>
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Table 2 Table showing concluding remarks for different case studies

CHAPTER 4: SITE INTRODUCTION

4.1 Historical Development of Textile Mills

4.1.1 History and Development of Textile Industry in Madhya Pradesh

The history of the growth of the textiles industry in M.P. is as unwieldy as the State itself, the industry has assumed its highest position and size because of many political changes in the map of India. The present state of Madhya Pradesh has been formed by the integration of Madhya Bharat, Vindhya Pradesh, Bhopal and 17 districts of Mahakoshal which were part of former Pradesh. Madhya Bharat was itself constituted in only in 1948 by the merger of many Princely States. Vindhya Pradesh had its own indentivity. Bhopal was an independent state till 1956. And many of the districts of Mahakoshal were also princely states prior to Independence. ¹

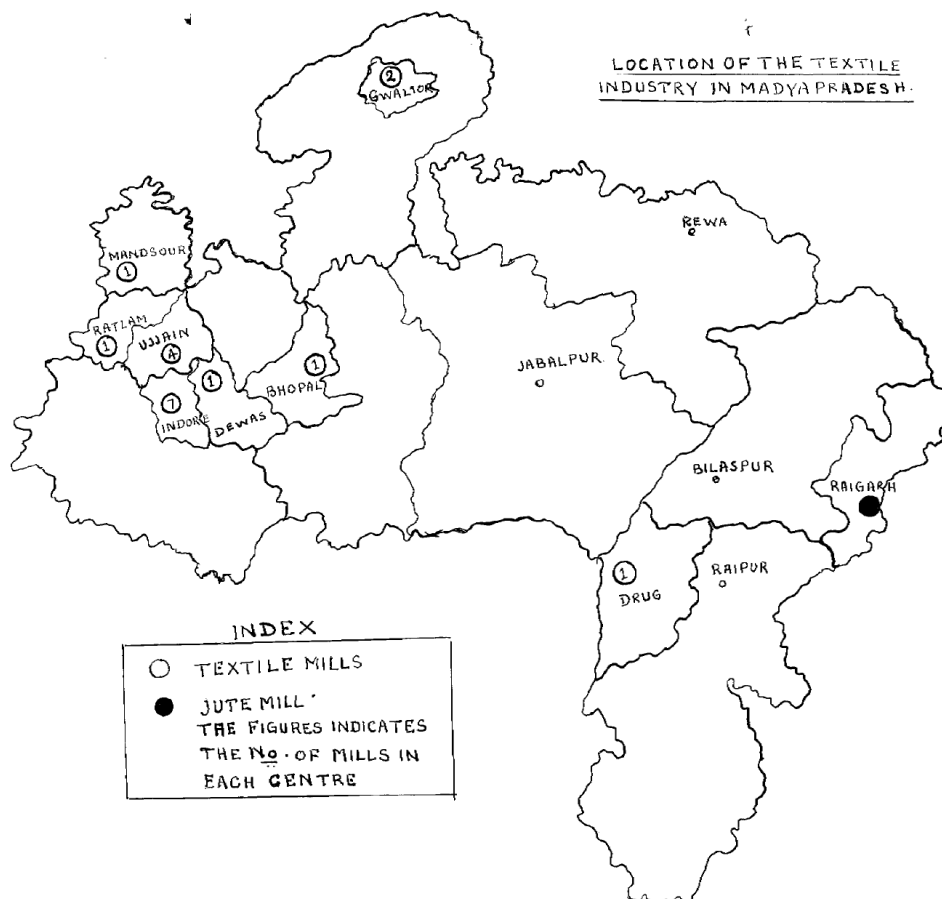


Figure 14 Map showing the location of different mills in former Madhya Pradesh

¹ [Http://hdl.handle.net/10603/34491](http://hdl.handle.net/10603/34491)

In the former state of Madhya Bharat next to agriculture, the textile industry held the pride of place, contributing to the prosperity of the State. Thus, the textile industry occupied a very prominent position among the factory industries as it employed the largest number of labour.¹

Maps shows the location of the industry and position of raw material. It is apparent from the map that the industry is localized in Madhya Bharat region in comparison to Mahakoshal region, as a major portion of raw material i.e. Cotton is produced in Madhya Bharat region around which the industry is localized whereas only as in significant part of the total cotton produced in the state is taken from Mahakoshal region.¹

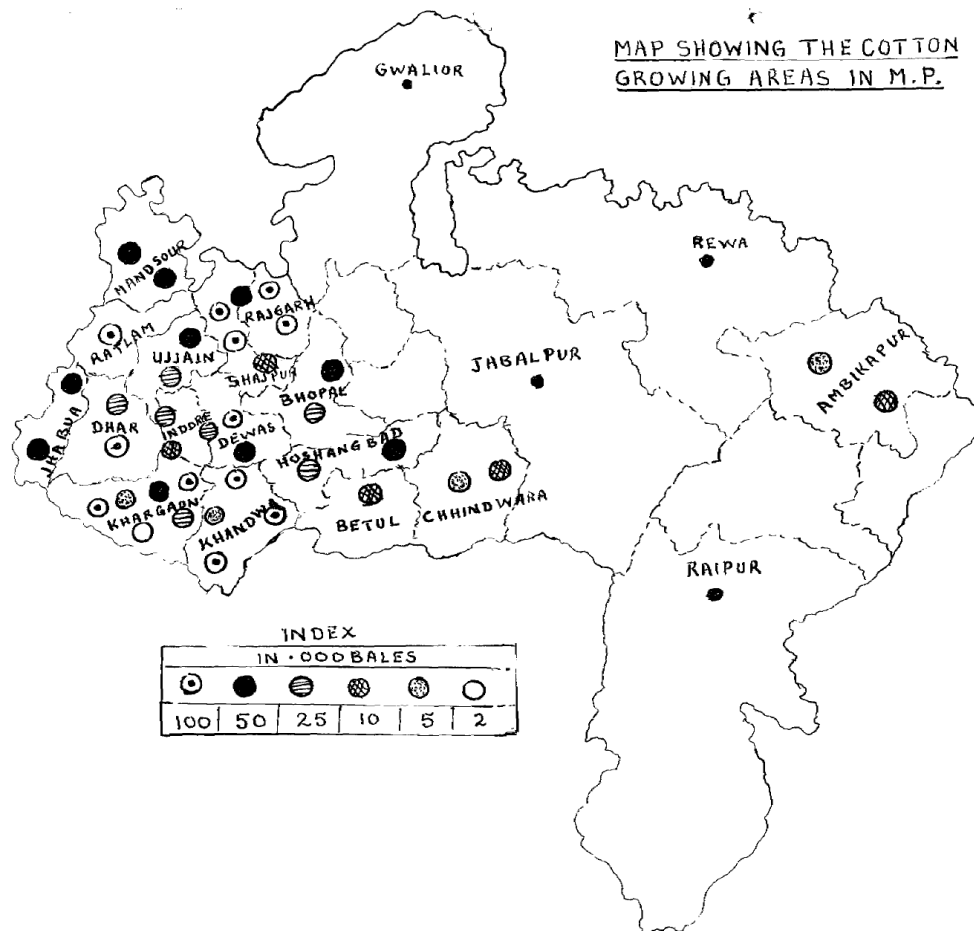


Figure 15 Map showing the location of cotton growing areas in former Madhya Pradesh

4.1.2 Introduction of Indore

Indore is situated between the two earthly abodes of Lord Shiva which are now holy shrines and visited by many devotees – the two Jyotirlingas at Ujjain and Omkareshwar. Because of its location between these two holy places, it was believed that the city is blessed and is being protected from the evil. A famous historian considers that only during the 17th century, the city of Indore underwent rapid and visible change as finding suggest that Indore was considered as Kasba in official court record of Mughal ruler Aurangzeb. And by the turn of 18th century the city's position got elevated further as it developed to become a Chief Administrative headquarter i.e. Pargana. (Directorate of Census Operations, 2011)

A very important development in Indore's historical evolution is that with the ingress and setting up of factories, in particular the textile mills , the concern for the rights of mill workers took the forefront and paved way for well-structured labour unions which represented mill workers with aim to avoid their exploitation. (Directorate of Census Operations, 2011)

4.1.3 Introduction of Cotton Mills in Indore

The cotton grown and produced in Indore was the lifeline of the textile mill industry in England. The cotton grown at Indore and Nimar was sent to England. Due to the state patronage and various facilities, the trend of establishing mills in Indore began in 1909.

A company from Mumbai, established, the Indore Malwa United Mills Ltd. Maharaja Tukoji Rao Holkar III himself inaugurated it on December 2, 1909. Hukum Chand Mill in 1916, Swadeshi cotton and Flour mill in 1921, Kalyanmal Mill in 1923, Rajkumar mills in 1924 and Nandlal Bhandari Mill in 1925 came in quick succession. With the establishment of these mills Indore acquired the status of one of the premier textile centers of India.

4.2 Introduction to Mill Lands

The site is mill precinct having approx. 6 mill compounds, all of them abandoned in present condition namely - Indore Malwa United Mill (48 acres approx.), Hukumchand Mill (47 acres approx.), Rajkumar Mill(15 acres approx.), Kalyan Mill(40 acres approx.), Swadeshi Mill(16.5 acres approx.) and Bhandari Mill(23 acres approx.).

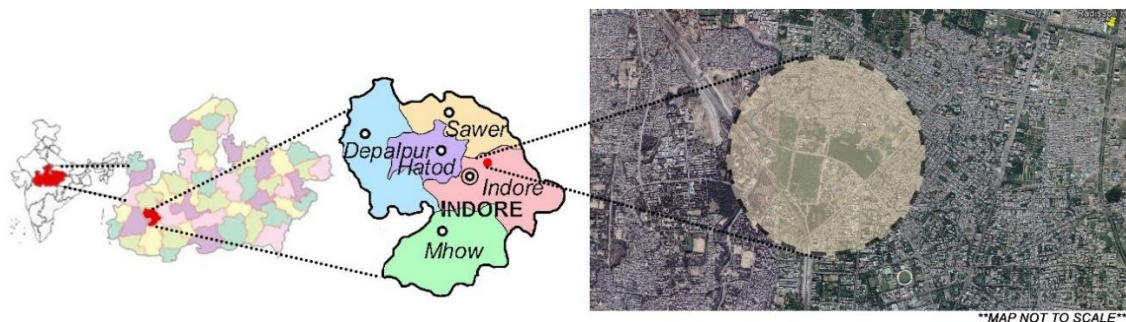


Figure 16 Location Map



Figure 17 Map showing the distribution of Mill lands in Indore.

4.3 SWOT Analysis of mill lands for selection of site

Indore Malwa United Mills

Strength

- land is owned by the Govt.
- site has become renowned landmark.
- less economic charge on site as compared to other mill lands.
- Industrial remains exist on site.
- Khan River follows through the site.

Weakness

- unplanned vegetation has taken over the site.
- land has sunken at places.
- commercial activity has come up along the boundary wall of the mill compound
- partly authorized and partly unauthorized.
- At many places the site has become garbage dumping ground.
- Khan Nullah carries the sewerage.

Opportunity

- such a landmark site can be developed for public use.
- people are still connected to the site as many nearby residents were associated with mil in one way or the other.
- as there is no other space of this scale, it can become oxygen chamber for the city.
- The water channel can be made accessible to public for recreational purpose.

Threats

- further delay in development will result in decay of existing structures.
- soil quality degradation.
- leakage in water tanks will get aggravated.
- anti-social activities taking place in some part of the mill compound.
- Khan Nullah carrying the sewerage is a serious health threat.

Hukumchand Mills

Strength

- land is owned by the Govt.
- site has become renowned along the lines of United Malwa Mills.

Weakness

- unplanned vegetation has taken over the site.
- Too much economic charge over site.
- No structures on site.

Opportunity

- can be developed as a part of productive landscape network.
- kids play in the mill compound thus can be developed to cater to local people.

Threats

- anti-social activities taking place in some part of the mill compound.
- soil quality degradation.
- might become a garbage dumping ground in absence of any development.

Kalyan Mills

Strength

- land is owned by the Govt.
- comparatively less vegetation.
- Residential setup has come up over the site.

Weakness

- residential plots have been allotted and sold within the site.
- wine shop within the site premises.
- No structures on site.

Opportunity

- can be developed as a part of productive landscape network.

Threats

- anti-social activities taking place in some part of the mill compound.
- residential activity might result in encroachment on site.

Swadeshi Mills

Strength

- comparatively less vegetation.
- nearby a residential setup.

Weakness

- land is owned by a private entity.
- unauthorized commercial activities have come up along the boundary wall of mill compound.

Opportunity

- can be developed as a part of productive landscape network.

Threats

- anti-social activities taking place in some part of the mill compound.

Rajkumar Mills

Strength

- land is owned by the Govt.
- comparatively less vegetation.
- Structures intact on site.

Weakness

- unplanned vegetation has taken over the site.
- in isolated interior part of the mill area.

Opportunity

- can be developed as a part of productive landscape network.

Threats

- further delay in development will result in decay of existing structures.

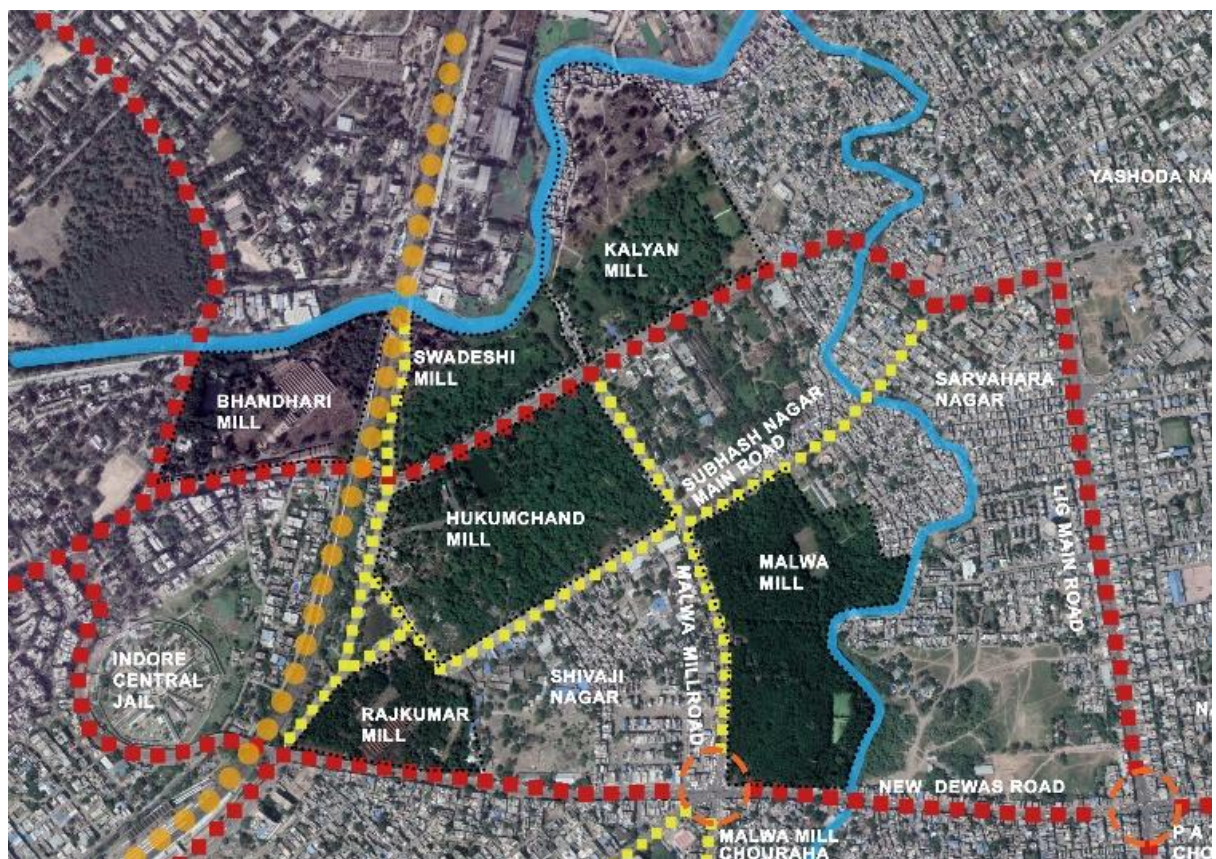


Figure 18 Map showing the Mill lands and its context

CHAPTER 5: Analysis

5.1 Regional Level – Natural Resource Assessment

5.1.1 Climate Analysis

Indore is situated on a boundary line of humid subtropical climate and tropical savanna climate (as per Koppen Classification system). Because its located at a higher altitude coupled with its landlocked position and its substantial distance from the sea, even the night during hot summer months are relatively cool as compared to day. Because of these factors the weather of Indore has stark difference in temperature during summers and winters.

Because of the same unique location along the western fringes of Madhya Pradesh state, the climatic conditions throughout the Indore city is determined. Summer period in Indore is from April to June and temperatures raise as high as 45 deg C during the month of May. The average summer temperature in Indore hovers around 35-40 deg C.

Despite such harsh summer temperatures during daytime, the evenings are comparatively much cooler and habitable, again because of its unique location. Indore is situated on the southern end of the Malwa Plateau because of which the coolers winds of Shab-e-Malwa brace the city to provide a cooler evening and night. January is the coldest month of the year.

Indore district's climate is marked by dry hot summers and properly distributed rainfall throughout the South-West monsoon season during which the district gets the maximum share of its rainfall i.e. around 92% of total annual rainfall is received during this period alone (June to September). This Southwest Monsoon season in general arrives by the middle of month of June, giving respite from harsh summers. Average annual rainfall for the district hovers around somewhere 960.96mm. (CGWB, 2013)

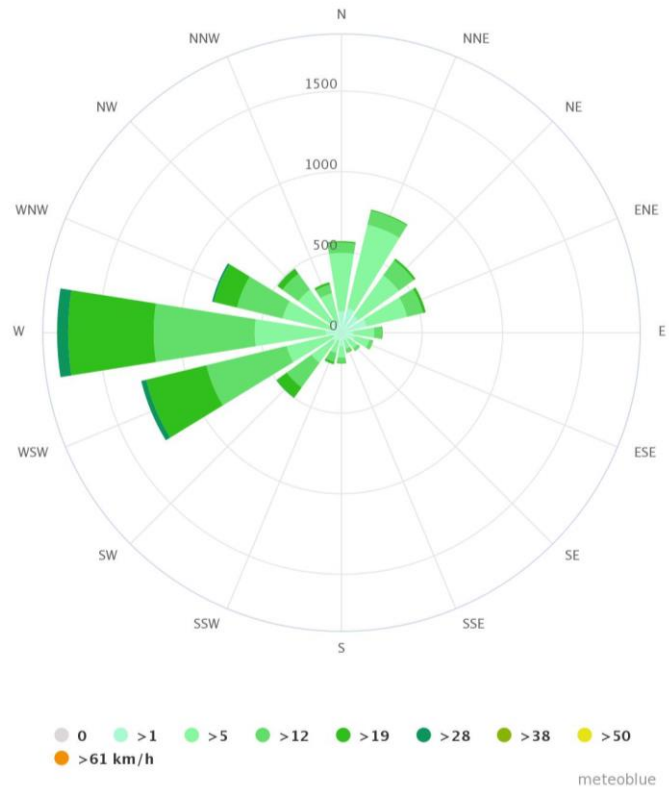


Figure 19 Wind rose diagram for Indore city

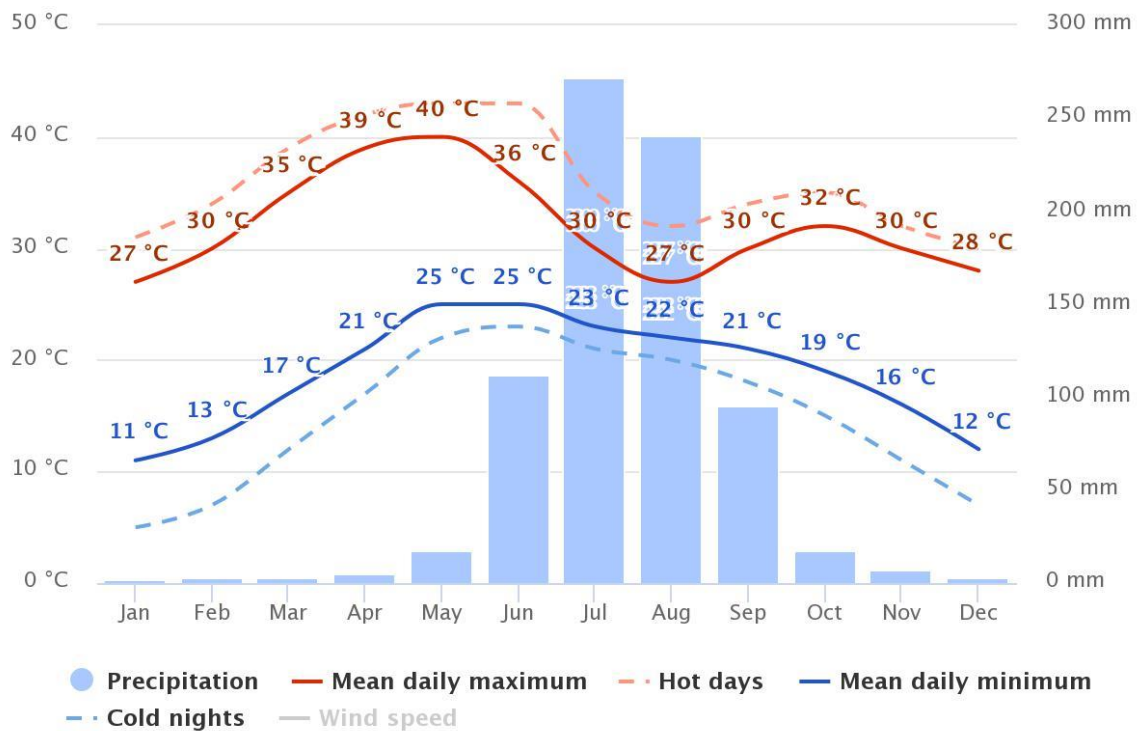


Figure 20 Bar chart showing the temperature variations

5.1.2 Geology Map

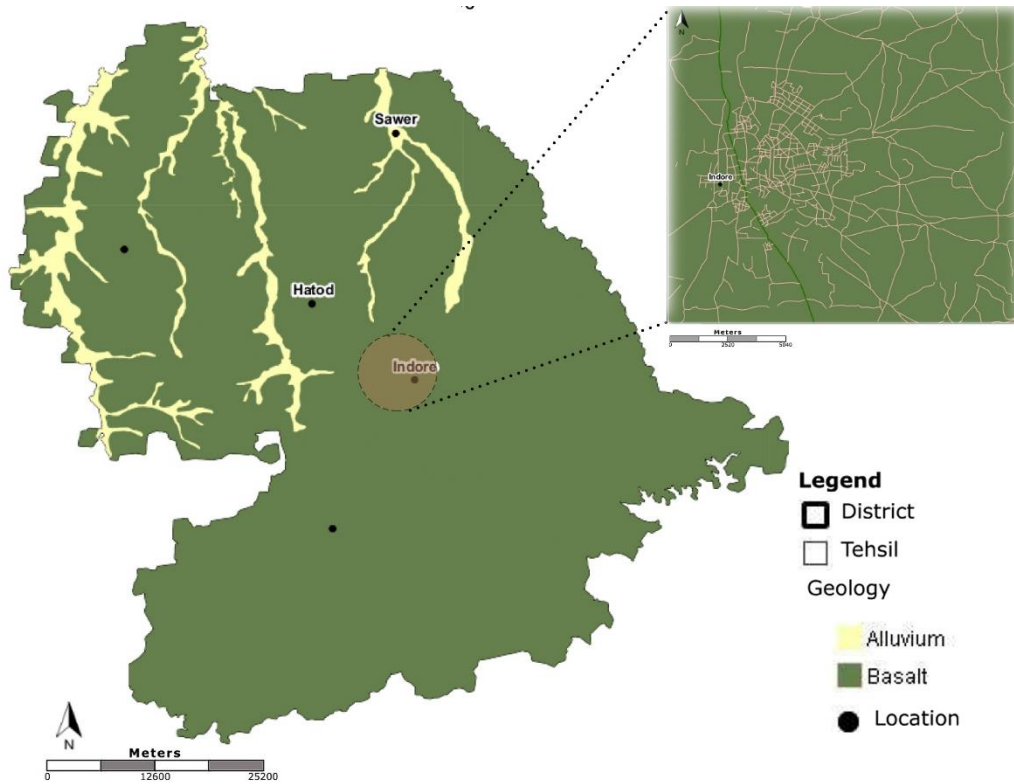


Figure 21 Geological map for Indore City with blown up of the study area

5.1.3 Hydrology Map

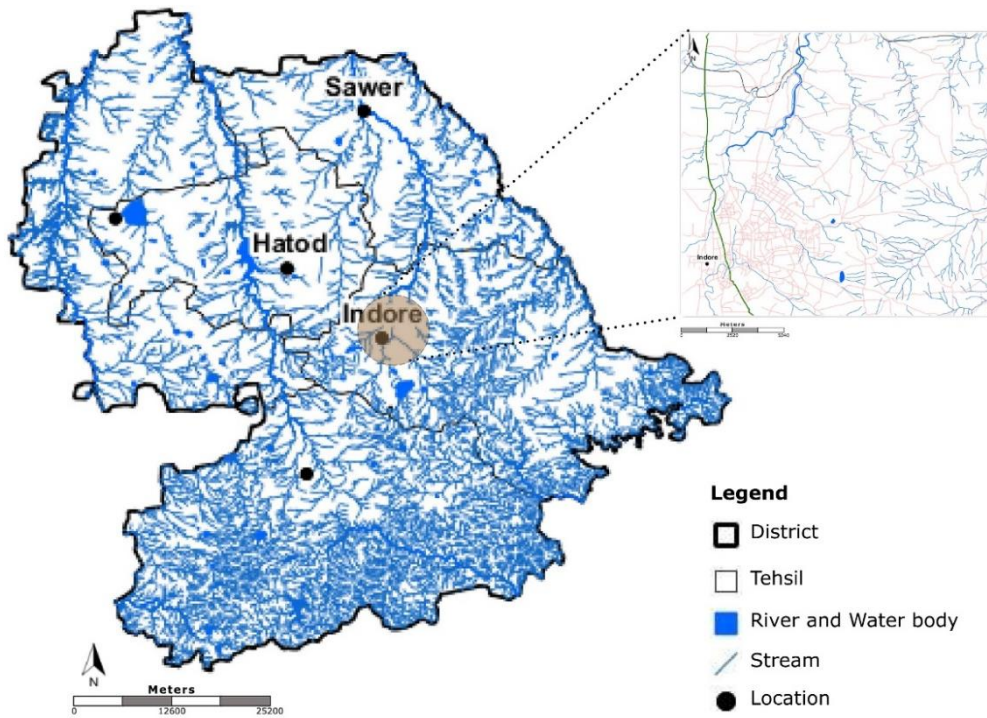


Figure 22 Hydrological map for Indore City with blown up of the study area

5.1.4 Slope Map

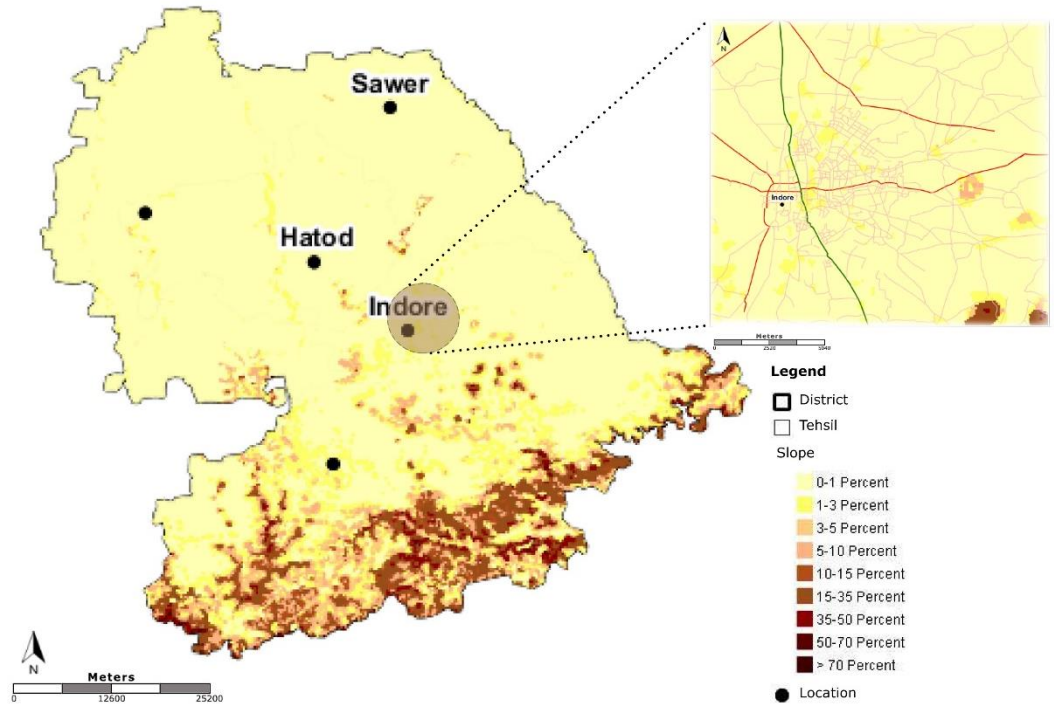


Figure 23 Slope map for Indore City with blown up of the study area

5.2 Site Level Assessment

5.2.1 Evolution of Site.



Figure 24 Evolution of site with respect to existing structures on site in different years.

5.2.2 Present day scenario.

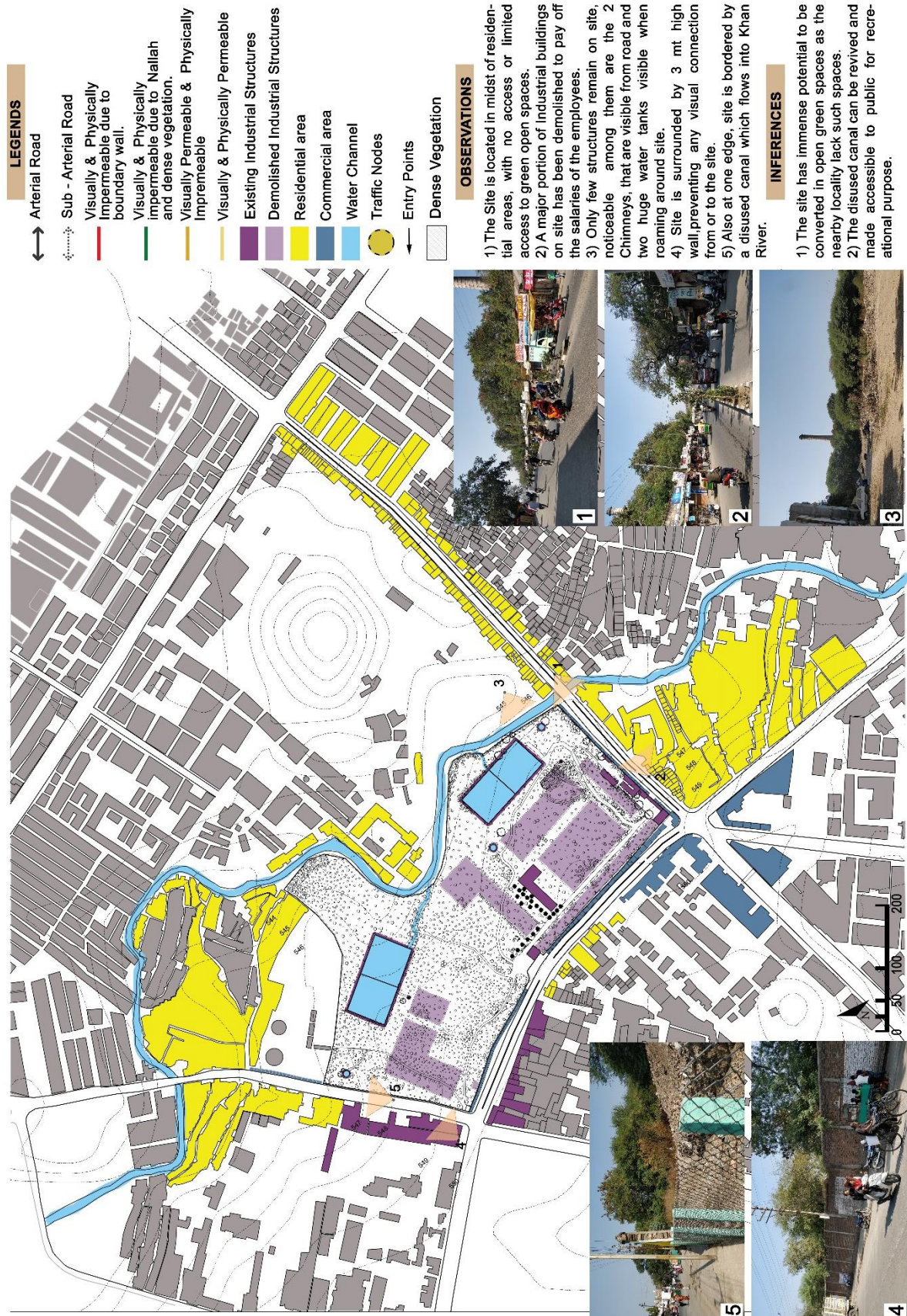


Figure 25 Existing scenario of Site and its immediate surroundings

5.2.3 Accessibility Analysis

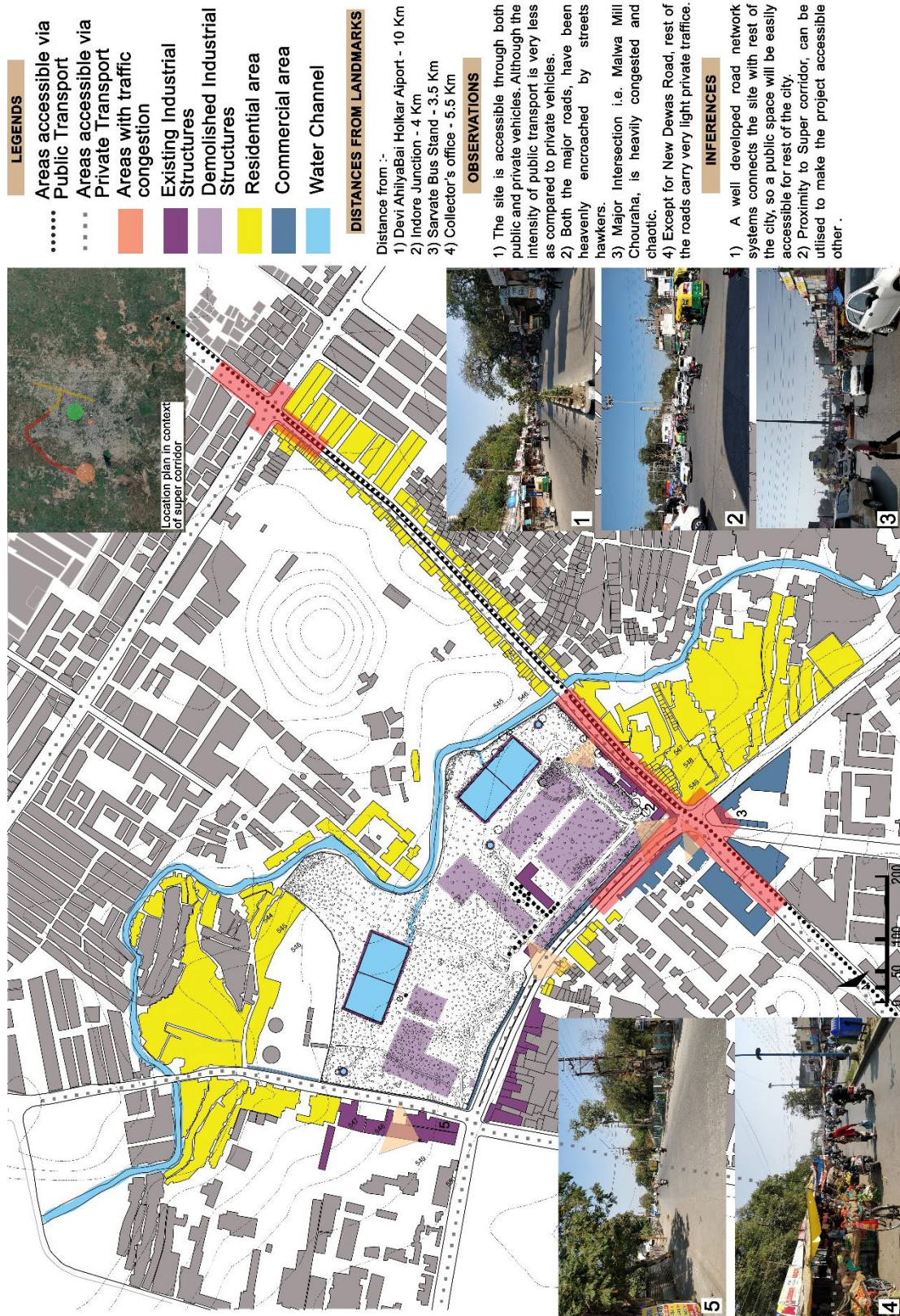


Figure 26 Map showing the accessibility scenario around the site

5.2.4 Activity Mapping

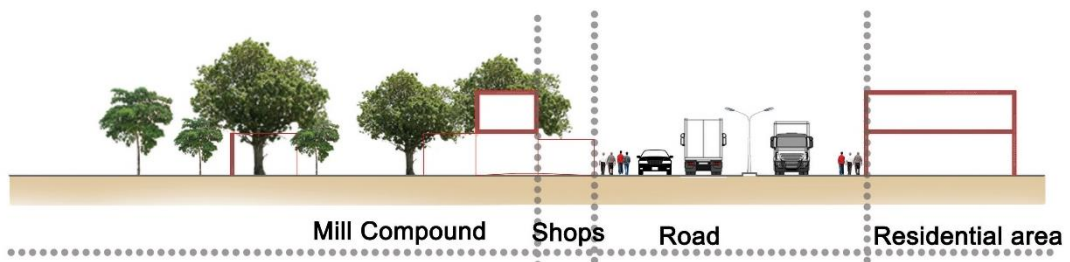
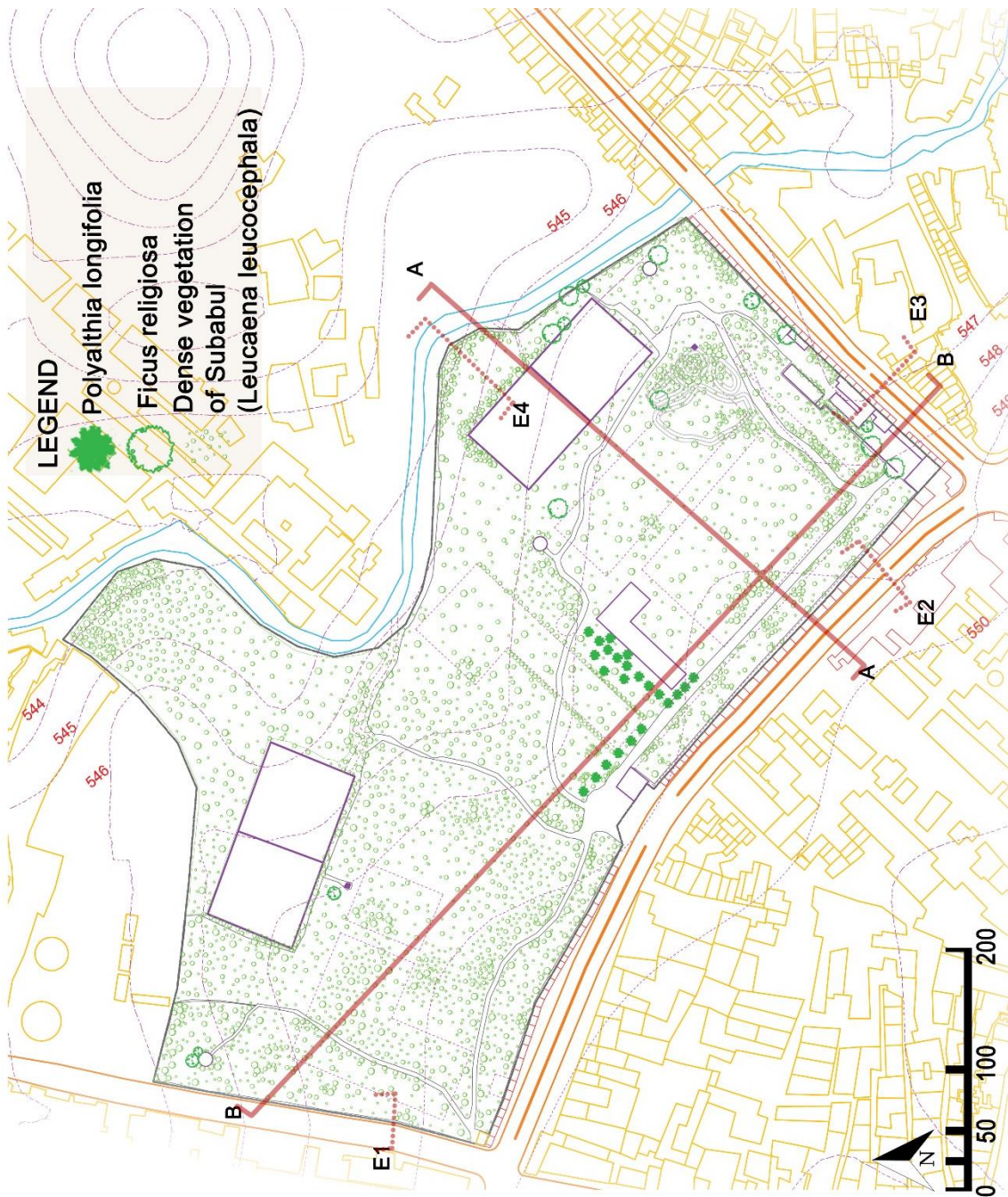


Figure 27 Map showing activities happening in and around the site

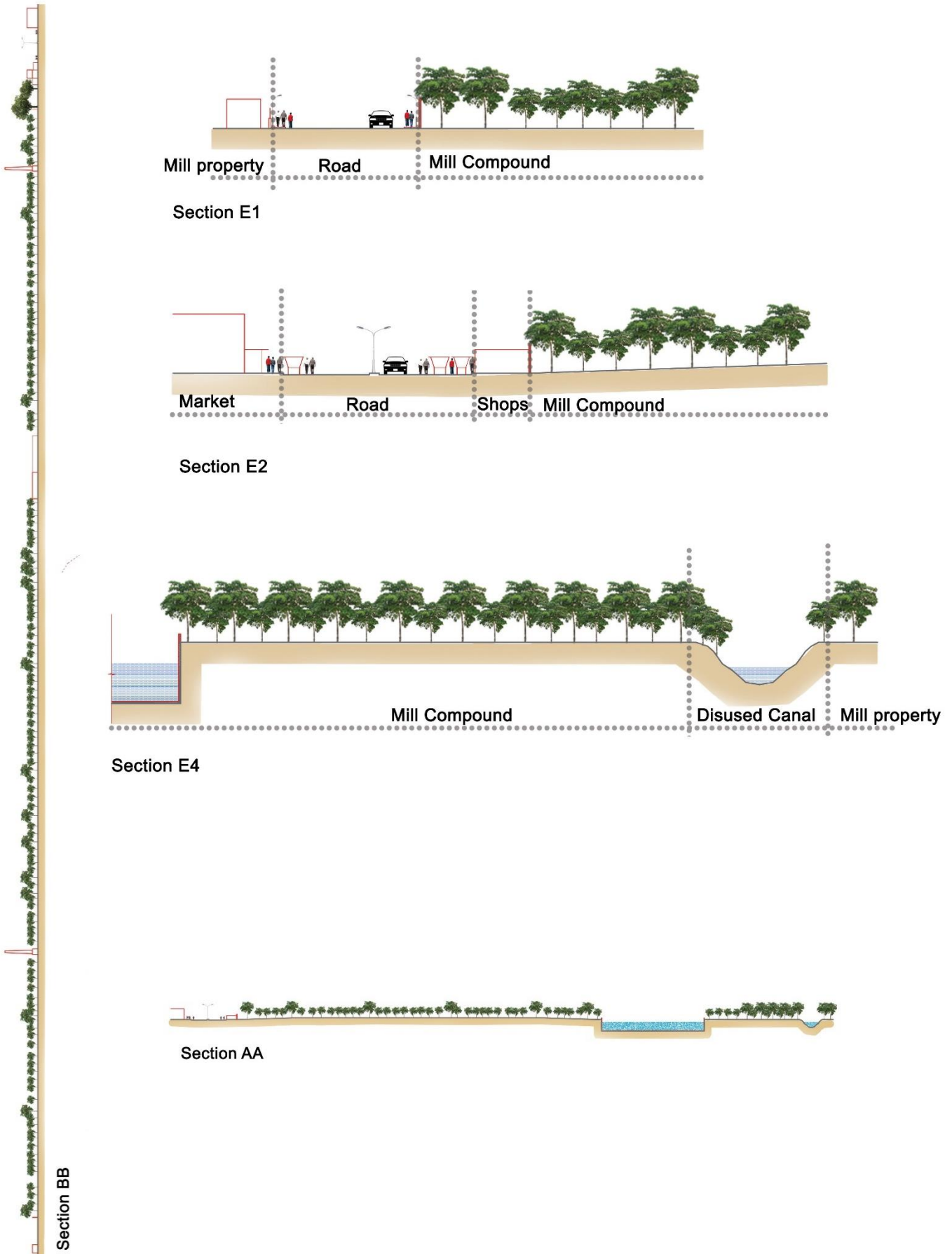
5.2.5 Vegetation Analysis



5.2.6 Site Sections



Section E3



5.2.7 Built Structure Analysis



Figure 29 Map showing different built structure present on site and their condition today.

5.2.8 Slope Analysis

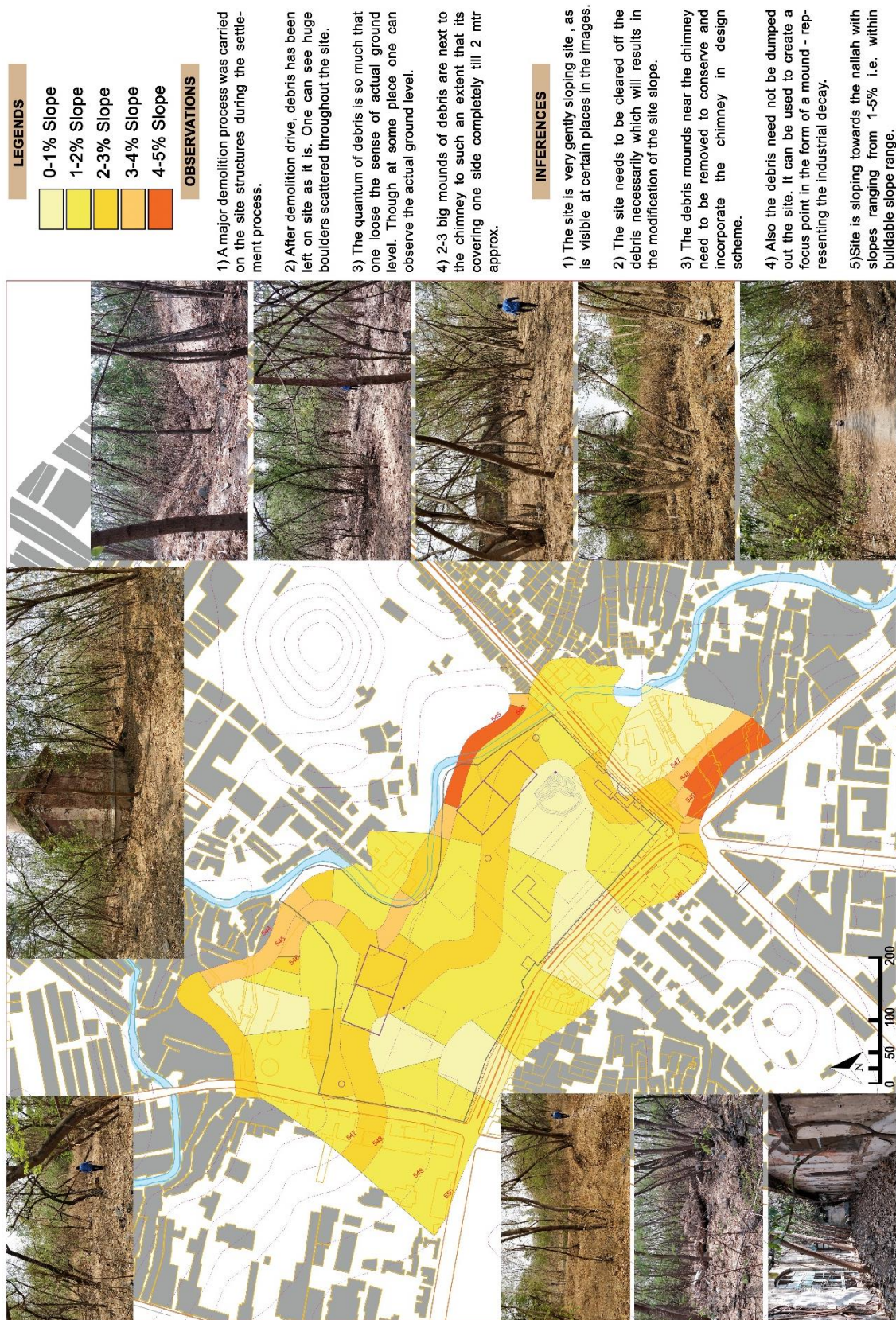


Figure 30 Map showing the slopes and debris mound present on site.

CHAPTER 6: DESIGN DEVELOPMENT

6.1 Concept

As the thesis title suggests, the concept revolves around proposing a design scheme transforming an abandoned mill land into Productive Landscape. The design approach to achieve this goal revolves around 4 cornerstones – **Reuse, Remember, Raise and Revitalize**.

The first cornerstone of **Reuse** forms the base of design concept as the abandoned mill land has been proposed to be reused or recycled for a new process though of same nature i.e. an industrial process can come up over the site, but it needs not be a textile industry, but an industry which can revitalize the area in different aspects like – socio-economic, environmental, aesthetical etc. Thus, it can be said the site has been reused by giving it a new function while keeping the essence of its earlier function alive.

The second cornerstone of **Remember** evolves around the reusing the existing built spaces of the earlier industrial function because the earlier cotton textile industry was being run over the site premises and many people were employed by the said industry. The development of the area and its residents can be attributed to the mill industry. Even after its closure, the people around the mill lands especially mill workers and their family still feel connected to the mill lands. This is evident from the facts that during the demolition of mill property, the workers made sure that the chimneys are not demolished for they felt that chimneys have become a part of their lives.

Therefore, it became essential to incorporate these for different purposes in sync with overall design scheme. Assigning them functions will depend the strategy whether to reuse them actively i.e. make accessible to the different user groups or reuse them passively i.e. symbolically, making them as focal points etc.

The third cornerstone of **Raise** represents the idea of making the site productive economically and environmentally by means of providing a function which will be of industrial nature, but which will be ecologically sensitive as well. This becomes necessary because of two reasons – First to make the project self-sustaining in the longer run and Second – to provide direct benefits to different user groups – in

different aspects like - socio-economic, environmental, aesthetical, recreational and the likes.

The fourth cornerstone of **Revitalization** is about how the project will infuse a new life in the remnants of a decades old cotton industry and how this intervention will have far reaching positive effects on different earlier-mentioned aspects of the society. Some of these effects will be visible early while some will be slower yet remarkable in the longer run.

6.2 Zoning

The site after analysis on different parameters has been divided into different zones depending upon the nature and type of design intervention as per the proposed design scheme. The zoning majorly reflects the types of spaces that have been proposed based on functionality - be it of industrial, educational, recreational or environmental nature.

Each zone has a different function as compared to other but they all have been connected to devise a legible productive landscape scheme. Following are the zones

Productive Zone – Comprising of Orchards and areas under floricultural practices. It's also includes the administrative and utility/storage zones as allied activities.

Natural Zone – Comprising of forested lands, for increasing the biodiversity and to break the set patterns established by orchards.

Recreational/Educational Zone – Comprising of passive and live museum and recreational areas like O.A.T and musical fountain etc.

6.3 Site Analysis conclusion & Design program

Analysis on different parameters guided in the formulation of design area program as follows: -

- Land use regulations made sure that the proposed activities be of industrial nature. Also, as the site is in the core of the city, polluting industries cannot be introduced. Among nonpolluting industries options were like – IT industries, floriculture and horticulture etc. Horticulture and Floriculture are in sync with the approach of Productive Landscape, therefore these industries were preferred over others.
- Accessibility analysis reflects that such a industry can be catered to because the site is well connected to airport and railways system, to make sure that the produce from the proposed productive landscape can reach local, national and international market in time.
- Activity analysis shows that the site has become a landmark in the city and therefore can be harnessed to promote a haat kind of space, as the city of Indore lacks in such a kind of space. Also, a commercial zone inside a productive landscape will improve the chances of the project to be self-sustainable in terms of economic sense.
- Vegetation analysis asserts the need of proposing a natural zone having diverse trees to make up for loss of vegetation cover due to removal of invasive subabul trees. And such a natural area will be helpful to break the pattern established by orchards and floriculture productions.
- Built structure analysis made it mandatory to preserve the existing built structures like 2 chimneys, 2 water tanks and office building as these structures are almost 100-year-old thus being a part of Industrial Heritage. Therefore, they have been incorporated in design scheme in both ways – actively and symbolically.
- Other areas such as parking lots, utilities have been incorporated to supplement the overall design scheme.

6.4 Design Sheets

6.4.1 Master Plan



Figure 31 Proposed Master Plan

6.4.2 Planting Plan



Figure 32 Proposed Planting Scheme

6.4.3 Grading Plan

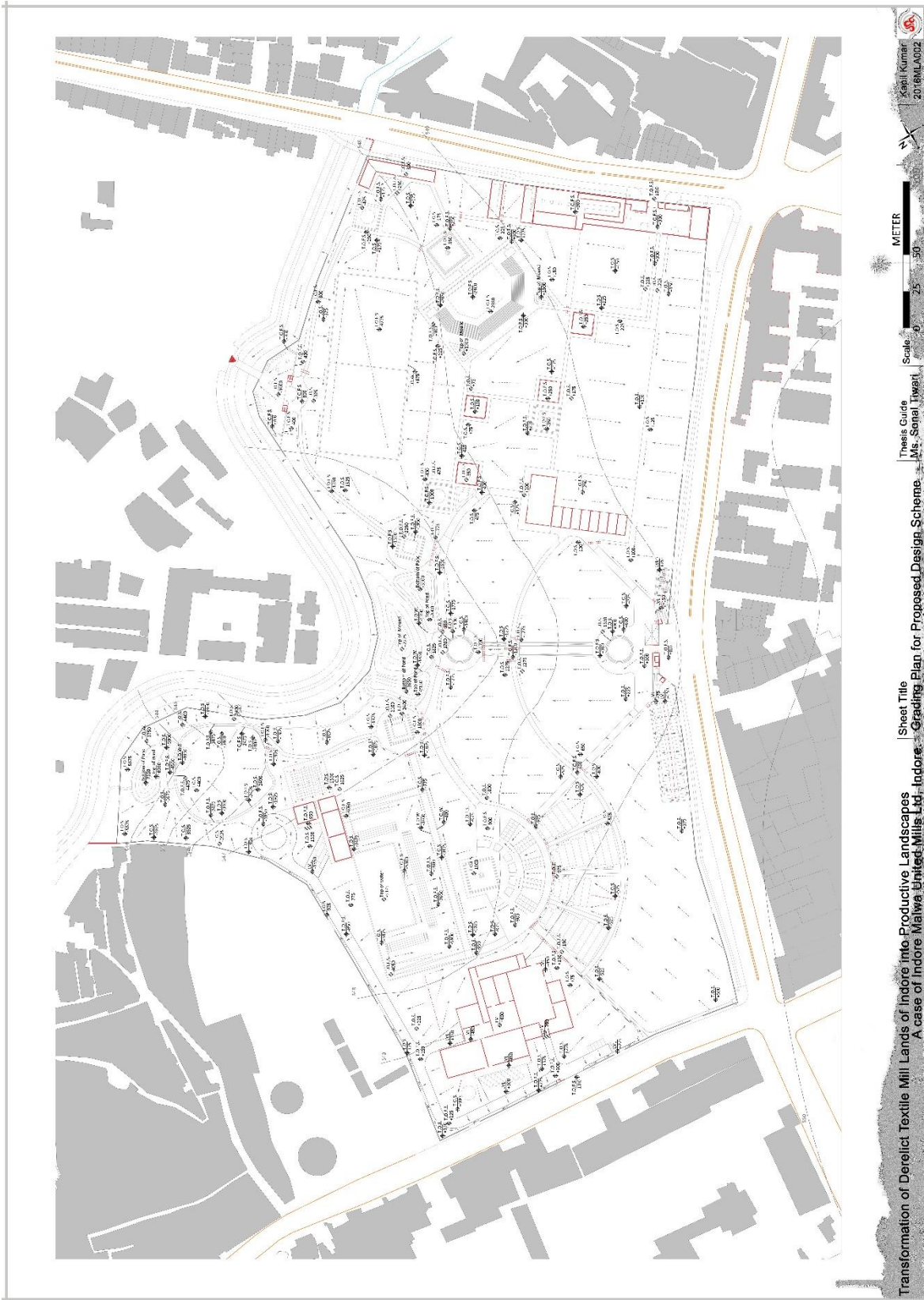


Figure 33 Proposed Grading Plan

6.4.4(a&b) Sections

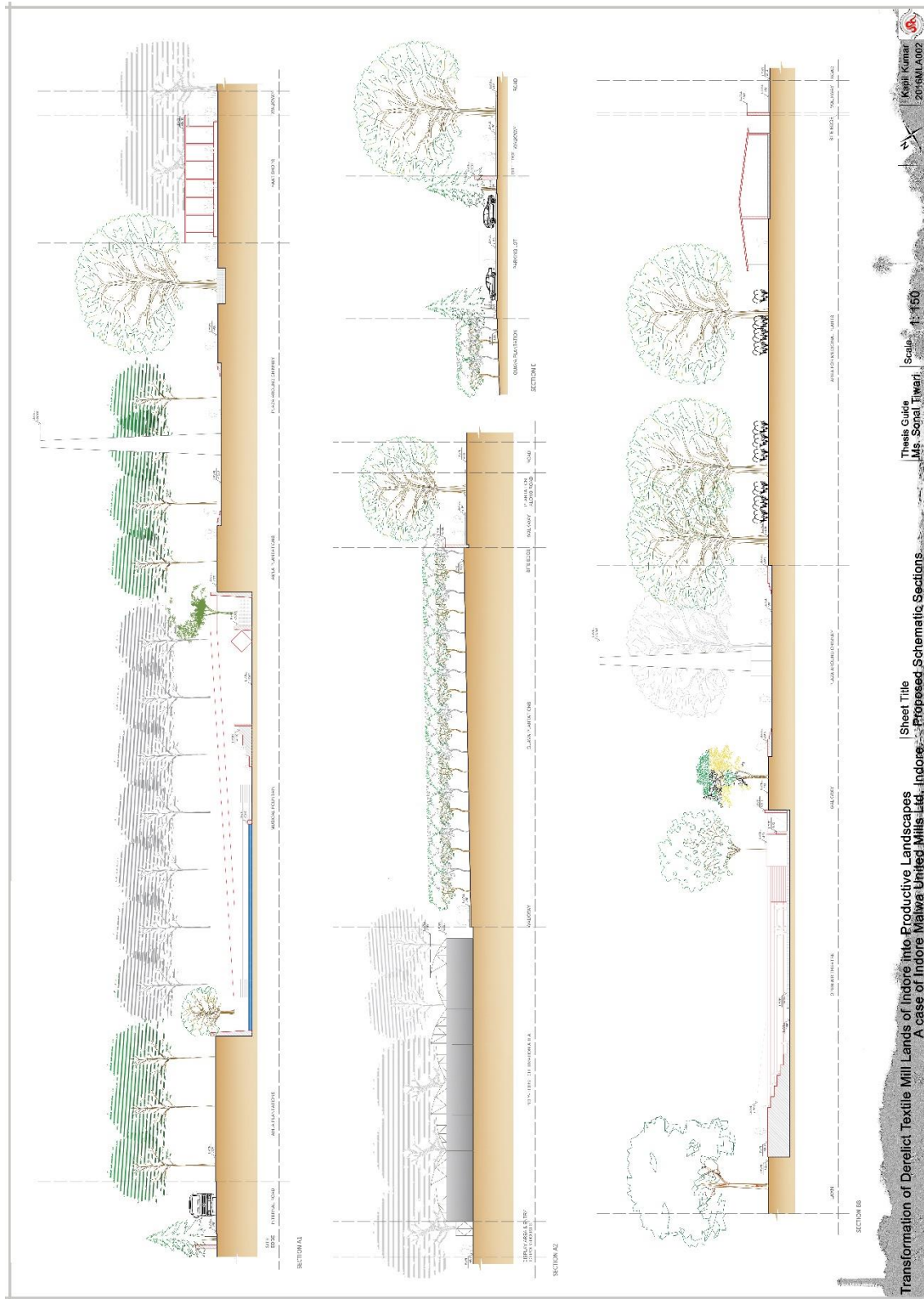


Figure 34 Sections (a)

6.4.5 Part plan with area programs

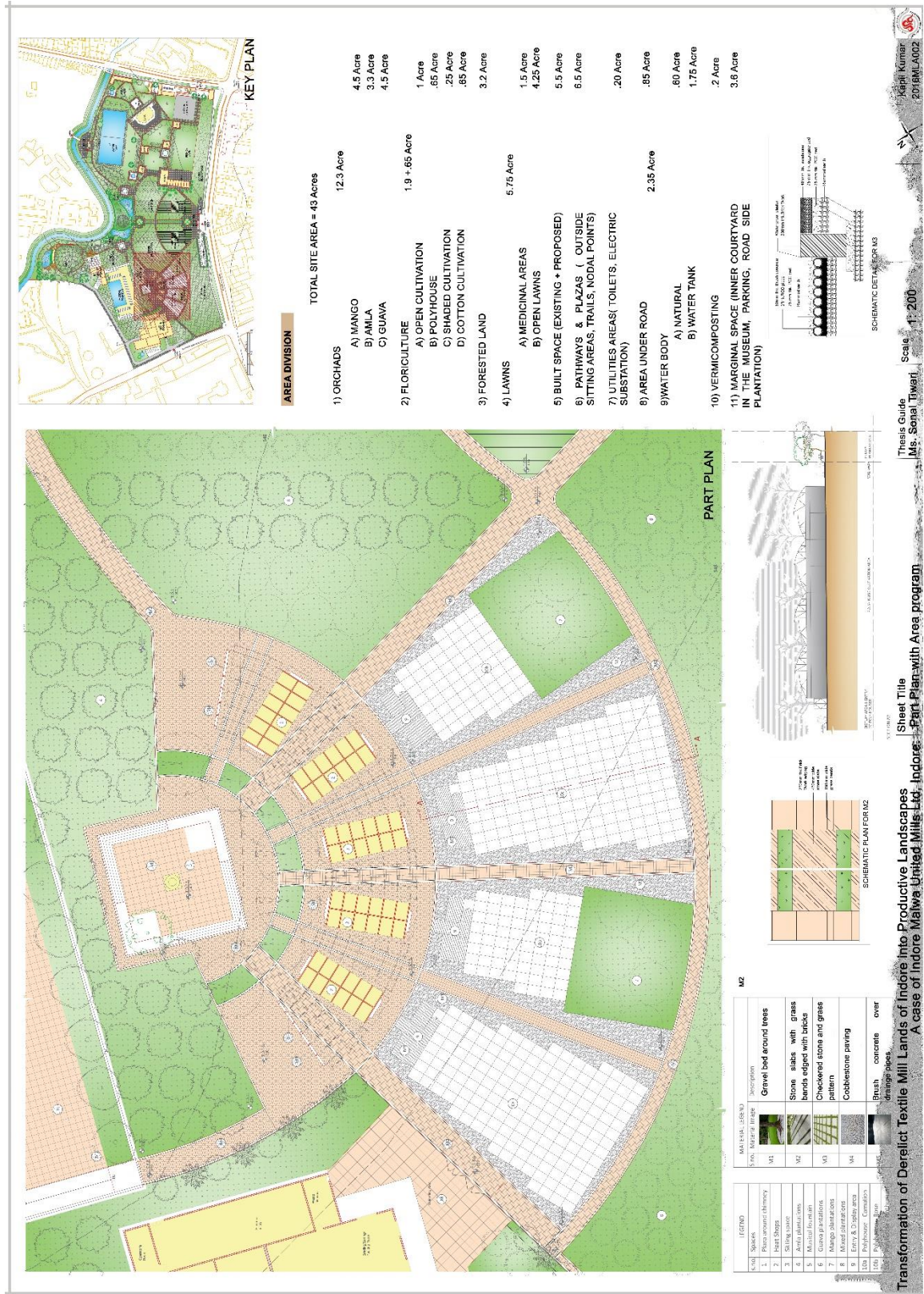


Figure 36 Part plan of Haat area along with area division

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